

Prof. Dr. Misael Sebastián Gradilla Hernández

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Scopus Author ID: 57205531771



Semblanza

El Dr. Misael Sebastián Gradilla Hernández obtuvo una licenciatura en ingeniería ambiental del Instituto Tecnológico de Estudios Superiores de Occidente (ITESO), México. Obtuvo una maestría en ciencia y tecnología con especialización en ingeniería ambiental y un doctorado en innovación biotecnológica del Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C. (CIATEJ). Obtuvo un segundo doctorado en gestión de la Universidad de Guadalajara con énfasis en educación para la sostenibilidad. Fue investigador posdoctoral en el Laboratorio Nacional de Ciencias de la Sostenibilidad (LANCIS) del Instituto de Ecología de la Universidad Nacional Autónoma de México (UNAM), entre 2020 y 2022. Fue profesor e investigador del Tecnológico de Monterrey en Guadalajara desde 2011 hasta 2025 y director asociado del departamento de tecnologías sostenibles y civil de 2024 a 2025. Fue también líder del eje de investigación del plan institucional de sostenibilidad y cambio climático del Tec de Monterrey desde 2022 hasta 2025 y líder del laboratorio de sostenibilidad y cambio climático. Fue director general de Protección y Gestión Ambiental de la Secretaría de Medio Ambiente y Desarrollo Territorial del gobierno de Jalisco, México, de 2018 a 2021. Fue profesor investigador asociado a la Universidad de Leeds en 2023 y es profesor investigador asociado en la Universidad de California Davis en el periodo proyectado de 2024-2029. El Dr. Gradilla-Hernández es miembro del Sistema Nacional de Investigadores Nivel 1 y se especializa en el monitoreo y evaluación de la salud de cuerpos de agua superficiales y en estrategias biotecnológicas para el tratamiento de aguas de procedencia agroindustrial y residuos, incluyendo digestión anaerobia y tratamiento basado por microalgas. Ha sido director/codirector de 15 estudiantes tesis de posgrado (maestría y doctorado). Es autor de más de 70 artículos de revistas y capítulos de libros indizados en revistas internacionales. Ha sido coautor de varios de los programas ambientales del Estado de Jalisco, como la estrategia para reducir la pérdida y desperdicio de alimentos en el estado de Jalisco, el programa de gestión integral de residuos "Jalisco Reduce" y el desarrollo de un sistema de apoyo a la toma de decisiones en Río Santiago. También ha participado en diferentes proyectos y artículos de innovación educativa para el desarrollo sostenible. Finalmente, el Dr. Gradilla Hernández ha desarrollado una línea de investigación para el desarrollo sostenible.



Biographical note

r. Misael Sebastián Gradilla Hernández earned a bachelor's degree in environmental engineering from the Instituto Tecnológico de Estudios Superiores de Occidente (ITESO), Mexico. He obtained a master's degree in science and technology with a specialization in Environmental Engineering and a Ph.D. in Biotechnological Innovation from the Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C. (CIATEJ). He obtained a second Ph.D. in Management from the University of Guadalajara with an emphasis on Education for Sustainability. He was a postdoctoral researcher at the National Laboratory of Sustainability Sciences (LANCIS) of the Institute of Ecology at the National Autonomous University of Mexico (UNAM) between 2020 and 2022. He was a professor and researcher at Tecnológico de Monterrey in Guadalajara from 2011 to 2025 and served as Associate Director of the Department of Sustainable and Civil Technologies from 2024 to 2025. He was also the leader of the research axis of the Institutional Plan for Sustainability and Climate Change at Tecnológico de Monterrey from 2022 to 2025 and leader of the Laboratory of Sustainability and Climate Change. He served as General Director of Environmental Protection and Management at the Secretariat of Environment and Territorial Development of the Government of Jalisco, Mexico, from 2018 to 2021. He was an Associate Research Professor at the University of Leeds in 2023 and is an Associate Research Professor at the University of California, Davis, for the projected period 2024–2029. Dr. Gradilla Hernández is a Level 1 member of the National System of Researchers and specializes in monitoring and evaluating the health of surface water bodies and in biotechnological strategies for the treatment of agro-industrial wastewater and residues, including anaerobic digestion and microalgae-based treatment. He has served as director or co-director of 15 graduate theses (Master's

and Ph.D.). He is the author of more than 70 articles and book chapters indexed in international journals. He has co-authored several environmental programs in the State of Jalisco, including the strategy to reduce food loss and waste in the state of Jalisco, the integrated waste management program “Jalisco Reduce,” and the development of a decision-support system for the Río Santiago. He has also participated in various projects and articles on educational innovation for sustainable development. Finally, Dr. Gradilla Hernández has developed a research line focused on sustainable development.



Employment

Instituto Tecnológico de Estudios Superiores de Monterrey Associate director of the department of sustainable and civil technologies and Leader of the Sustainability and Climate Change Laboratory	2024 to 2025
University of California, Davis Research Associate	2024 to 2029
University of Leeds Research Associate and visiting research fellow	2024
Instituto Tecnológico de Estudios Superiores de Monterrey Research professor in the Bioengineering Department and Leader of the Sustainability and Climate Change Laboratory	2011 to 2025
Ministry of Environment and Territorial Development of the government of Jalisco, Mexico Environmental Science Consultant form Regions4	2021 to 2025
Ministry of Environment and Territorial Development of the government of Jalisco, Mexico General Director of Environmental Protection	2018 - 2021



Other designations

National System of Researchers (SNI) of National Council for Science and Technology (CONACyT) Member of the national system of researchers, Level 1	2020 to 2025
Science of the Total Environment Editorial Board Member	2023 to 2025
Council of the Fund for Environmental Protection of the State of Jalisco. Advisor	2021 to 2025
Board of Directors of the Council of Science and Technology of the State of Jalisco (COECyTJAL) Advisor	2018 - 2021
Innovation, Science and Technology State Awards, Jalisco 2019. Jury	2019
Call of the Jalisco Scientific Development Fund Program to address State Problems, 2019 (FODECIJAL) Technical reviewer	2019
Installation of the State Bioethics and Research Commission of the State of Jalisco 2018-2024 Participation as Permanent advisor	2019



Education

Postdoctoral fellowship

2020 - 2022

The National Laboratory of Sustainability Sciences (at the Institute of Ecology) in the National Autonomous University of Mexico (UNAM for its acronym in Spanish)
Project title: “Desarrollo de un modelo dinámico para la gestión sostenible del agua en la cuenca del Río Santiago-Guadalajara”
Academic tutor: Dra. Marisa Mazari Hiriart
<https://drive.google.com/file/d/1qdEYrjNp-G8wZPujM-F2IR377GQzFYCE/view>

Ph.D in Biotechnology Innovation with specialization agri-food biotechnology

2020

Graduated with an Honorable Mention in Excellence

Center for Research and Assistance in Technology and Design of the State of Jalisco (CIATEJ for its acronym in spanish).
License number: 12777426
https://drive.google.com/file/d/1T21-1A6OcfjMEE_UgNS-_LmXWAZOONc_/view?usp=sharing
Thesis title: “Aplicación de redes neuronales diferenciales para caracterizar las interacciones microbianas en un simulador ex vivo del tracto gastrointestinal”
Academic tutor: Dra. Anne Christine Gchaedler Mathis
<https://ciatej.mx/estudia-ciatej/posgrados/graduados>

Ph.D in Education Management with specialization in Sustainability

2017

Center for Administrative and Economic Sciences. University of Guadalajara (UdeG for its acronym in Spanish).
License number: 13720664
https://drive.google.com/file/d/1vag9Ix6s-oP_wuSUBiIg2IplRd4KZDlm/view?usp=sharing
Thesis title: “Contribución de las disciplinas académicas al desarrollo de competencias para el desarrollo sostenible en los estudiantes”
Academic tutor: Dra. Carla Delfina Aceves Ávila
<https://riudg.udg.mx/handle/20.500.12104/81182>

M. Sc. in Science and Technology with specialization in Environmental Engineering

2013

Center for Research and Assistance in Technology and Design of the State of Jalisco (CIATEJ for its acronym in spanish).
License number: 11912276
https://drive.google.com/file/d/1R9y8Q0KLEVt2o377EP_0D7F0YwjhtpAQ/view?usp=sharing
Thesis title: “Patrones de bioacumulación de Cu, Zn, Hg y Cd utilizando bagre (*ictalures punctatus*) como biomonitor activo en el lago de Chapala”
Academic tutor: Dra. Claudia Alvarado Osuna
<https://ciatej.mx/estudia-ciatej/posgrados/graduados>

B. Sc. in Environmental Engineering

2010

Western Institute of Technology and Higher Education (ITESO for its acronym in spanish).
License number: 6723294

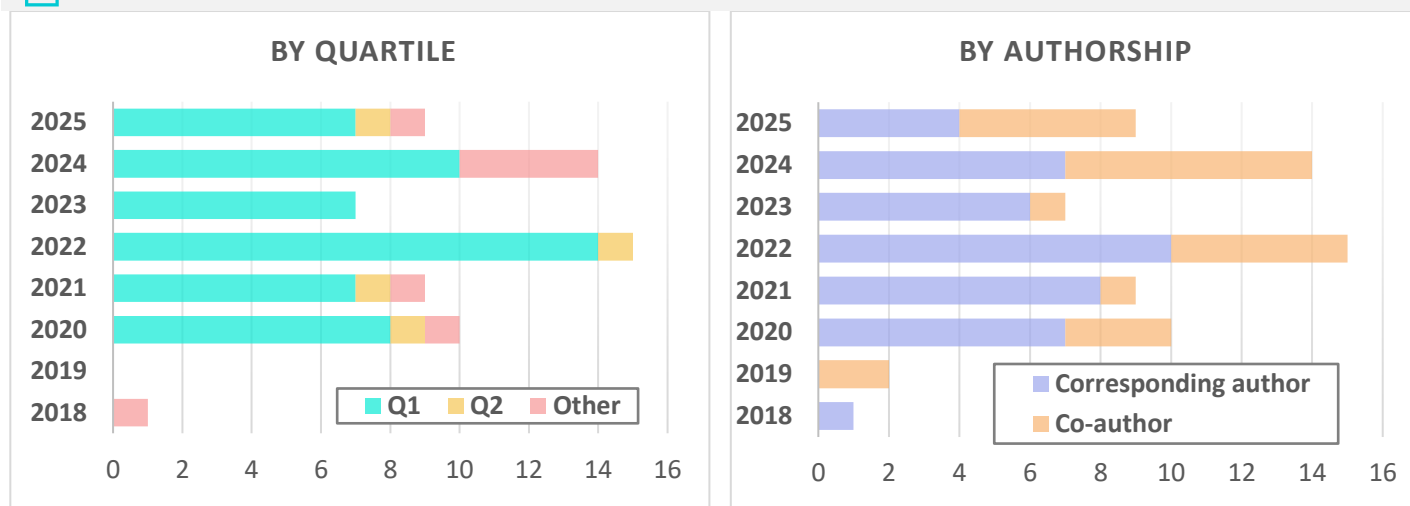
Additional information

Language competencies (English)

TOEFL ITP score 673: Language proficiency



Scientific publications



Summary of scientific production

Ibarra-Esparza J, Ibarra-Esparza, F E, González-López M E, Garcia-Gonzalez A. and **Gradilla-Hernández M. S. (2025)** Instruments and Continuous Monitoring for the Anaerobic Digestion Process: A Systematic Review. Accepted for publication in IEEE Access

García-López, C. D., Barajas-Álvarez, P., González-López, M. E., Loge, F. J., Mahlknecht, J., Senés-Guerrero, C., & **Gradilla-Hernández, M. S. (2025)**. Evaluating sludge management strategies using wastewater treatment plant simulations and life cycle assessment. *Journal of Material Cycles and Waste Management*, 27(5), 2972-2986.
<https://link.springer.com/article/10.1007/s10163-025-02375-5>

Ramos-Reyes, M. F., Radilla-Alatorre, F., Díaz-Vazquez, D., González-López, M. E., Barajas-Álvarez, P., Tuesta-Popolizio, D. A., Mussatto, S. I., **Gradilla-Hernández, M. S. (2025)**. Yeast-filamentous fungi co-culture: A circular bioeconomy approach for distillation stillage treatment and revalorization. *Sustainable Chemistry & Pharmacy*. 45:102053.
<https://doi.org/10.1016/j.scp.2025.102053>

Castanier-Rivas, J. D., Larrea-Cedeño, A. S., Sukumara, S., García de Alva-Verduzco, J., González-López, M. E., **Gradilla-Hernández, M. S., (2025)**. Towards Circularity: Integrating biochar production from maize stover into the tequila industry. *Sustainable Chemistry & Pharmacy*. 45:102027. <https://doi.org/10.1016/j.scp.2025.102027>

Brown, L. E., Maavara, T., Zhang, J., Chen, X., Klaar, M., Moshe, F. O., Ben-Zur, E., Stein, S., Grayson, R., Carter, L., Levintal, E., Gal, G., Ziv, P., Tarkowski, F., Pathak, D., Khamis, K., Barquín, J., Philamore, H., **Gradilla-Hernández, M. S., Arnon, S. (2025)**. Integrating sensor data and machine learning to advance the science and management of river carbon emissions. *Critical Reviews in Environmental Science and Technology*. 55(9):600–623.
<https://doi.org/10.1080/10643389.2024.2429912>

López-Sánchez, A., García-López, C. D., Lara-Topete, G. O., Castanier-Rivas, J. D., Barajas-Álvarez, P., González-López, M. E., Silva-Gálvez, A. L., Zhou, H., Lan, C. Q., Robles-Rodríguez, C. E., Meramo-Hurtado, S., **Gradilla-Hernández, M. S. (2025)**. Consequential life cycle assessment of pretreatment strategies for a microalgae-based wastewater treatment pilot unit in a circular livestock industry bioeconomy. *Algal Research*. 89:104041. <https://doi.org/10.1016/j.algal.2025.104041>

Uribe-Velázquez, T., Díaz-Vázquez, D., Barajas-Álvarez, P., González-López, M. E., **Gradilla-Hernández M. S.,** Garcia-Amezquita, L. E., Carrillo-Nieves, D., García-Cayuela, T. (2025). From waste to value: Mitigating the environmental impact of whey in Jalisco, Mexico. *Journal of Cleaner Production*. 501:145334. <https://doi.org/10.1016/j.jclepro.2025.145334>

Ramos-Reyes, M. F., González-López, M. E., Barajas-Álvarez, P., García-García C. E., Tuesta-Popolizio, D. A., Mussatto, S., **Gradilla-Hernández, M. S. (2025)**. Exploring the potential of distillery vinasses through upcycling: Pathways to a circular economy. *Environmental Technology & Innovation*. 38:104072. <https://doi.org/10.1016/j.eti.2025.104072>

Hammond, C. R., **Gradilla-Hernández, M. S.**, Loge, F. J. (2025). Microalgal-bacterial aggregates for wastewater treatment: Origins, challenges, and future directions. *Water Environ Res.* 97(2):e70018. <https://doi.org/10.1002/wer.70018>

Fernández del Castillo, A., Verduzco Garibay, M., Senes-Guerrero, C., **Gradilla-Hernández, M. S.**, (2025). Chapter 7. A revisit of constructed wetlands technology—microbial density and diversity and their relation to pollutant removal. In A. Kumar Yadav, J. Vymazal, Y. Zhao, & P. Srivastava (Eds.), *Emerging Developments in Constructed Wetlands* (pp. 195-216). Elsevier, Netherlands. <https://doi.org/10.1016/B978-0-443-14078-5.00007-6>

Hinojosa-Avila, C. R., Chedraui-Urrea, J. J. T., Estarrón-Espinoza, M., **Gradilla-Hernandez, M. S.**, García-Cayuela, T., (2025). Chemical profiling and probiotic viability assessment in Gueuze-style beer: Fermentation dynamics, metabolite and sensory characterization, and *in vitro* digestion resistance. *Food Chemistry.* 462:140916. <https://doi.org/10.1016/j.foodchem.2024.140916>

García-Gamboa, R., Díaz-Torres, O., **Gradilla-Hernández, M. S.**, Pérez-Brocal, V., Moya, A., González-Avila, M., (2024). Gut Bacterial Composition and Nutritional Implications in Mexican and Spanish Individuals with Inflammatory Bowel Disease Compared to Healthy Controls. *International Journal of Molecular Sciences.* <https://doi.org/10.22541/essoar.171322696.69831029/v1>

Brown, L. E., Maavara, T., Chen, X., Zhang, J., Klaar, M., Moshe, F. O., Ben-Zur, E., Stein, S., Grayson, R., Carter, L., Levintal, E., Gal, G., Ziv, P., Tarkowski, F., Pathak, D., Khamis, K., Barquín, J., Philamore, H., **Gradilla-Hernandez, M. S.**, Arnon, S., (2024). Integrating sensor data and machine learning to advance the science and management of river carbon emissions. *Critical Review in Environmental Science and Technology.* <https://doi.org/10.1080/10643389.2024.2429912>

Dogra, K., Lalwani, D., Dogra, S., Panday, D. P., Raval, N. P., Trivedi, M., Mora, A., **Gradilla-Hernandez, M. S.**, Snyder, S. A., Mahlknecht, J., Kumar, M., (2024). Indian and global scenarios of Bisphenol A distribution and its new analogues: Prevalence & probability exceedance. *J Hazard Mater.* 135128. <https://doi.org/10.1016/j.jhazmat.2024.135128>

Díaz-Torres, O., Valencia-de los Cobos, E. O., Kreft, J. U., Loge F. J., Díaz-Vázquez, D., Mahlknecht, J., **Gradilla-Hernández, M. S.**, Senés-Guerrero C., (2024). A metagenomic study of antibiotic resistance genes in a hypereutrophic subtropical lake contaminated by anthropogenic sources. *Science of the Total Environment.* 927. <https://doi.org/10.1016/j.scitotenv.2024.172216>

Mazari-Hiriart M., Fernández-Reyes A., Alvarado-Velázquez, J., **Gradilla-Hernández, M. S.**, Díaz-Vázquez D., (2024). Water quality management in a tropical karstic system influenced by land use in Chiapas, Mexico. *Environmental Challenges.* 16. <https://doi.org/10.1016/j.envc.2024.100981>

Lara-Topete, G. O., Castanier-Rivas, J. D., Bahena-Osorio, M. F., Krause, S., Larsen, J. R., Loge, F. J., Mahlknecht, J., **Gradilla-Hernández, M. S.**, González-López, M. E., (2024). Compounding One Problem with Another? A Look at Biodegradable Microplastics. *Science of the Total Environment.* 944. <https://doi.org/10.1016/j.scitotenv.2024.173735>

Fernández del Castillo, A., Verduzco Garibay, M., Díaz-Vázquez, D., Yebra-Montes, C., Brown, L.E., Johnson, A., García-González, A., **Gradilla-Hernández, M. S.**, (2024). Improving river water quality prediction with hybrid machine learning and temporal analysis. *Ecological Informatics.* <https://doi.org/10.1016/j.ecoinf.2024.102655>

García-Gamboa R, Díaz-Torres O, Senés-Guerrero C, **Gradilla-Hernández MS**, Moya A, Pérez-Brocal V, Garcia-Gonzalez A, González-Avila M (2024). Associations between bacterial and fungal communities in the human gut microbiota and their implications for nutritional status and body weight. *Sci Rep.*14(1):5703. <https://doi.org/10.1038/s41598-024-54782-7>

Silva-Gálvez, A. L., López-Sánchez, A., Camargo-Valero, M. A., Prosenc, F., González-López, M. E., **Gradilla-Hernández, M. S.**, (2024). Strategies for livestock wastewater treatment and optimised nutrient recovery using microalgal-based technologies. *Journal of Environmental Management.* 354. <https://doi.org/10.1016/j.jenvman.2024.120258>

Amador-Castro, F., González-López, M. E., Lopez-Gonzalez, G., Garcia-Gonzalez, A., Díaz-Torres, O., Carbajal-Espinosa, O.,

Gradilla-Hernandez, M. S., (2024). Internet of Things and citizen science as alternative water quality monitoring approaches and the importance of effective water quality communication. *Journal of Environmental Management*. 352. <https://doi.org/10.1016/j.jenvman.2023.119959>

Lara-Topete, G., Castanier-Rivas, J. D., **Gradilla-Hernández, M. S.**, González-López, M. E. (2024). Life cycle assessment of agave bagasse management strategies: PLA biocomposites versus conventional waste disposal practices. *Sustainable Chemistry and Pharmacy*. 37. <https://doi.org/10.1016/j.scp.2024.101435>

Silva-Gálvez, A.L., Palafox-Sola, M.F., González-López, M. E., López Sánchez, A., Orozco-Nunelly, D.A., Pérez-Hermosillo, J., González-Valdez, J & **Gradilla-Hernández, M.S. (2024)** Treatment of swine wastewater using microalgae. In (Eds.), *Algae mediated bioremediation: Industrial Prospectives*. Wiley, USA. [10.1002/9783527843367.ch10](https://doi.org/10.1002/9783527843367.ch10)

Díaz-Vázquez, D., Camacho Sandoval, T., Reynoso Delgadillo, J., Gómez Ayo, N. A., Macías Calleja, M. G., Martínez Barba, M. P., **Gradilla-Hernández, M. S. (2023)**. Characterization and multicriteria prioritization of water scarcity in sensitive urban areas for the implementation of a rain harvesting program: A case study for water-scarcity mitigation. *Urban Climate*, 51. <https://doi.org/10.1016/j.uclim.2023.101670>

González-López, M. E., Calva-Estrada, S. J., **Gradilla-Hernández, M. S.**, Barajas-Álvarez, P. (2023). Current trends in biopolymers for food packaging: a review. *Fron. Sustain. Food Syst.* 7. <https://doi.org/10.3389/fsufs.2023.1225371>

López-Sánchez, A., Silva-Gálvez, A.L., González-López, M.E., Díaz-Vázquez, D., Orozco-Nunelly, D.A., Novoa-Leiva, I., González-Valdez, J.G., Casillas-García, L.F. & **Gradilla-Hernández, M.S. (2023)**. Valorization of livestock waste through combined anaerobic digestion and microalgal-based treatment in México: a techno-economic analysis for distributed biogas generation, animal feed production, and carbon credits trading. *Environmental Technology & Innovation*, 32. <https://doi.org/10.1016/j.eti.2023.103321>

Carrizales-Sánchez, A. K., Tamez-Rivera, O., Rodríguez-Gutiérrez, N. A., Elizondo-Montemayor, L., **Gradilla-Hernández, M. S.**, García-Rivas, G., Pacheco, A., & Senés-Guerrero, C. (2023). Characterization of gut microbiota associated with metabolic syndrome and type-2 diabetes mellitus in Mexican pediatric subjects. *BMC Pediatrics*, 23(1). <https://doi.org/10.1186/s12887-023-03983-6>

Ibarra-Esparza F.E., González-López, M.E., Ibarra-Esparza, j., Senés-Guerrero, C., Lara-Topete, G.O., Cansdale, A., Forrester, S., P.J. Chong, J., & **Gradilla Hernández, M.S. (2023)**. Implementation of anaerobic digestion for valorizing the organic fraction of municipal solid waste in developing countries: Technical insights from a systematic review. *Journal of Environmental Management*, 37. <https://doi.org/10.1016/j.jenvman.2023.118993>

Lara-Topete, G. O., Robles-Rodríguez, C. E., Orozco-Nunelly, D. A., Vázquez-Morillas, A., Bernache-Pérez, G., & **Gradilla-Hernández, M. S. (2023)**. A mini review on the main challenges of implementing mechanical biological treatment plants for municipal solid waste in the Latin America region: Learning from the experiences of developed countries. *Waste Management & Research*. <https://doi.org/10.1177/0734242X231154143>

Palafox-Sola, M. F., Yebra-Montes, C., Orozco-Nunelly, D. A., Carrillo-Nieves, D., González-López, M. E., & **Gradilla-Hernández, M. S. (2023)**. Modeling growth kinetics and community interactions in microalgal cultures for bioremediation of anaerobically digested swine wastewater. *Algal Research*, 102981. <https://doi.org/10.1016/j.algal.2023.102981>

Ibarra-Esparza FE, Verduzco-Garibay M, Lara-Topete GO, González-López ME, Orozco-Nunelly DA, Aguilar-Juárez O, Senés-Guerrero C and **Gradilla-Hernández M.S. (2022)**, A micro and macro-scale look at the biochemical methanogenic potential of the organic fraction of municipal solid waste generated in a large city of a developing country. *Frontiers in Environmental Science*. <https://www.frontiersin.org/articles/10.3389/fenvs.2022.1020208/abstract>

Díaz-Vázquez, D., Verduzco Garibay, M., Fernández del Castillo, A., Orozco-Nunelly, D. A., Senés-Guerrero, C., & **Gradilla-Hernández, M. S.** Yeast community composition impacts on tequila industry waste treatment for pollution control and waste-to-product synthesis. *Frontiers in Chemical Engineering*. <https://doi.org/10.3389/fceng.2022.1013873>

Fernández del Castillo, A., Garibay, M. V., Senés-Guerrero, C., Orozco-Nunelly, D. A., de Anda, J., & **Gradilla-Hernández, M. S. (2022)**. A review of the sustainability of anaerobic reactors combined with constructed wetlands for decentralized

wastewater treatment. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2022.133428>

García-Gamboa, R., Domínguez-Simi, M., **Gradilla-Hernández, M. S.**, Bravo, J., Moya, A., Ruiz-Álvarez, B., & González-Avila, M. (2022). Anticandidal and Antibiofilm Effect of Synbiotics including Probiotics and Inulin-Type Fructans. *Antibiotics*. <https://doi.org/10.3390/antibiotics11081135>

Guardiola-Márquez, C. E., Pacheco, A., Mora-Godínez, S., Schübler, A., **Gradilla-Hernández, M. S.**, & Senés-Guerrero, C. (2022). Septoglomus species dominate the arbuscular mycorrhiza of five crop plants in an arid region of northern Mexico. *Symbiosis*. <https://doi.org/10.1007/s13199-022-00851-2>

Díaz-Vázquez, D., Orozco-Nunnally, D. A., Yebra-Montes, C. Senés-Guerrero, C., & **Gradilla-Hernández, M. S.** (2022). Using yeast cultures to valorize tequila vinasse waste: an example of a circular bioeconomy approach in the agro-industrial sector. *Biomass and Bioenergy*. <https://doi.org/10.1016/j.biombioe.2022.106471>

López-Sánchez, A., Silva-Gálvez, A. L., Zárate-Aranda, E., Yebra-Montes, C., Orozco-Nunnally, D. A., Carrillo-Nieves, D., & **Gradilla-Hernández, M. S.** (2022). Microalgae-mediated bioremediation of cattle, swine and poultry digestates using mono-and mixed-cultures coupled with an optimal mixture design. *Algal Research*. <https://doi.org/10.1016/j.algal.2022.102717>

García-Gamboa, R., Domínguez-Simi, M.Á., **Gradilla-Hernández, M.S.**, Bravo-Madrigal, J, Moya, A, and González-Ávila (2022). Antimicrobial and Antibiofilm Effect of Inulin-Type Fructans, Used in Synbiotic Combination with *Lactobacillus* spp. Against *Candida albicans*. *Plant Foods Hum Nutr*. <https://doi.org/10.1007/s11130-022-00966-3>

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Experience as journal reviewer

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Hydrogenotrophs-Based Biological Biogas Upgrading Technologies. *Frontiers in Bioengineering and Biotechnology*. **2022**
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Projects for the dissemination and popularization of science

Historias para Mentes Curiosas Podcast **2024**
Participant – Episode 84: Water, anatomy of a crisis

Article in CONECTA: Medio ambiente: ayuda Tec Gdl a crear estrategia sostenible en Jalisco **2025**
[Article Link](#) **2025**

Panel organizer: Sustainable development and the participation of youth and women for the Santiago River basin.
[Panel Santiago River](#)

Article in TecScience: Rainwater Recovery and Data Science: A Strategy for the Urban Water Crisis **2025**
[Rainwater Recovery and Data Science: A Strategy for the Urban Water Crisis](#)

Article in TecScience: The challenge tequila vinasses represent in agriculture **2025**
[Impacto ambiental de las vinazas tequileras | TecScience](#)

Environmental Frequency Podcast **2024**
Participant. Episode 189. Topic: “Sustainable management of waste streams generated in the tequila industry”
<https://open.spotify.com/episode/4s4KMrX4u0JZxMMJvFup8G?si=sYGyFU17RViDM9Qmng3klg>

Article in CONECTA: Sustainable route! Tec professors share strategies in United Kingdom **2024**
[Sustainable route! Tec professors share strategies in United Kingdom | Tecnológico de Monterrey](#)

Article in CONECTA: Carbon Footprint: Tec’s Sustainability Lab invites you to a debate **2024**
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Article in TecScience: Bioplastics: how damaging can they be to the environment? **2024**
[Microbioplásticos: ¿son riesgo para el medio ambiente? | TecScience](#)

Article at TecScience: Fungi and bacteria, allies to combat obesity. **2024**
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Stories for Curious Minds Participant – Episode 84: Water: Anatomy of a crisis. https://open.spotify.com/episode/5caNkhMAHTFADEOtdLOC7G?si=1OzV3kp-RQGMQp_shL6Zyw	2024
Video: Inauguration of the Laboratorio de Sostenibilidad y Cambio Climático https://www.facebook.com/share/v/CiP8Agea6WAicwmo/?mibextid=WC7FNe	2024
Educator's Meeting Michoacan 2024 https://youtu.be/7D7kgi_QoWM	2024
Knowledge Exchange Workshop Water Connect with University of Leeds and University of California – Davis Invitation poster	2024
Interview on the TV channel Meganoticias Guadalajara on the new natural reserve in Jalisco. Meganoticias GDL Interview	2024
Podcast TecScience Tec Sounds Radio: “The problem wastewater represents for human health and ecosystems” Tec Science Tec Sounds Radio Tecnológico de Monterrey	2023
Article: “For the water! Tec Gdl and University of Leeds generate research.” ¡En pro del agua! Tec Gdl y Universidad de Leeds generan investigación Tecnológico de Monterrey	2023
Article: “To build artificial wetlands to help clean water” Humedales artificiales para ayudar a limpiar el agua TecScience	2023
XV Edition of “Expo Ingenierías” of Tecnológico de Monterrey Co-author and winning-team mentor. Topic: “Life cycle assessment of Agave fiber reinforced composites and biocomposites: The case of Jalisco.” Guadalajara, Mexico.	2023
Environmental Frequency Podcast Participant. Episode 161. Topic: “International Tequila Day, towards a sustainable industry” https://open.spotify.com/episode/3XE7NuRepSIOrtkp0aStVR?si=ttAMJN4rRZiNdWenND_McA	2023
Bioengineering Congress: “The role of bioengineering in the Mexican decarbonation” Organizer. https://youtu.be/yM5ANiBAB1c?si=l0FeDnnpn0ebjckH-	2023
Article: “Quality water: Team from Tec GDL created a prototype for river samples” https://conecta.tec.mx/es/noticias/guadalajara/investigacion/agua-de-calidad-equipo-de-tec-gdl-creo-prototipo-para-muestras	2023
Polea AC Podcast Participant. Topic: “The importance of the association between science and the implementation of climate change public policy” https://www.youtube.com/watch?v=gR9CaIKM7do	2023
HidroHack. Hackathon 2023 Winner team mentor. Team proposal: monitoring probe that estimates, remotely and in real time, the Santiago River's water quality index. Guadalajara, Mexico.	2023
Environmental Frequency Podcast	

Participant. Episode 143. Topic: "Jalisco and its Tequila: routes to sustainable" https://open.spotify.com/episode/3uC0iZsyrPkC4dC0vgA0Yo?si=V-sU4nDcQfWKGPI8Aprwyg	2023
Scientific coffee. A space for citizen's science. Moderator. Topic: "From the macro-problem to the micro-problem: the micro-impact of plastic residues on the environment"	2022
Mexico Carbon Forum Leader of the Tecnológico de Monterrey Team https://www.youtube.com/watch?v=b7zDngx3KIU	2022
Dialogue between academia, government, and society: Technological tools for the water quality index and the decision-making support system for the integral recovery of the Santiago River Leader https://www.youtube.com/watch?v=BGowdEJM-ik	2022
Towards the improvement in the management of vinasses and bagasse of tequila production: meeting between producers, academics, and government Leader https://www.youtube.com/watch?v=_MJTdkgxp9M	2022
Inauguration of the sustainability and climate change laboratory of Tecnológico de Monterrey Leader https://www.youtube.com/watch?v=YqDhrV9zOuc	2022
Towards improvement in agricultural waste management: meeting between producers, academics, and government Leader https://www.youtube.com/watch?v=obAeC-dY_nc	2022
Diffusion video (Tec leaders): Vinasses project. https://www.youtube.com/watch?v=J3evYW642ZY	2022
Article: "A scientific mission for Santiago River" https://www.mural.com.mx/libre/acceso/accesofb.htm?__rval=1&urlredirect=/una-mision-cientifica-por-el-rio-santiago-2022-05-22/op226979?utm_source=whatsapp&utm_medium=social&utm_campaign=promocion_suscriptor&referer=--7d616165662f3a3a793b73747670777a7a7e3b767a783a--	2022
Webinar: "World Environment Day" (CUCEA, University of Guadalajara) https://www.facebook.com/watch/live/?v=259913381919727&ref=watch_permalink	2020
Environmental Frequency Podcast Participant. Episode 16. Topic: "Environmental State Normative and single-use plastics" https://open.spotify.com/episode/5tgMZliNhXvkoSpnAXYgcK?si=l9K09y2LQ1yaaCaHk4hiNw	2019
TV report: "Regulation of one-use plastic bags and straws: Sebastián Gradilla, SEMADET" https://www.youtube.com/watch?v=XwcXUU0LnDk	2019
First Colloquium for the Dissemination, Research and Strengthening of Synthetic biology and Bioelectronics in the Occidental Region of Jalisco. Organizer. Zapopan, Jalisco, Mexico.	2019
Article: "Sebastián Gradilla, the water watchman" http://www.cienciamx.com/index.php/sociedad/personajes/22456-sebastian-gradilla-centinela-agua	2018



Authored public policy and legislation

- Manual of good practices in blueberry cultivation** 2023
Coauthor
[Manual de buenas prácticas arándano VF_2024.pdf](#)
- “Jalisco Reduce” The waste management policy of the State of Jalisco, Mexico, 2018-2024.** 2022
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- Development of a water quality index for the Santiago River in the Santiago-Guadalajara River Basin. Ministry of the Environment and Territorial Development. Government of the State of Jalisco.** 2022
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<http://riosantiago.jalisco.gob.mx/estrategia>.
- Environmental criteria and technical specifications to produce plastic bags for carrying and single-use straws to be distributed and/or sold in the State of Jalisco** 2019
Consultant and workshop participant
https://semadet.jalisco.gob.mx/sites/semadet.jalisco.gob.mx/files/nae_010_semadet_plasticos.pdf



Externally and internally funded research projects

- Support in the development of techno-economic models for GHG mitigation potential and cost modeling of eight new measures for Mexico's NDC.** 2025
Grant financed by the GIZ for SEMARNAT
<https://drive.google.com/file/d/1fjCWZ6BRJrZrxVqYX-crO65mJzhLahl/view?usp=sharing>
<https://drive.google.com/file/d/1fjCWZ6BRJrZrxVqYX-crO65mJzhLahl/view?usp=sharing> 2025
- Climate Skills for young**
Grant financed by the British Council for young researchers and education institution for climate change related research projects.
- AlianzaMX: Tecnológico de Monterrey – University of California Davis** 2025
Development of a preliminary roadmap for the restoration of the Río Santiago Basin.
Coordination and delivery of five strategic workshops
- HE Connects: UK-Americas Partnerships for TNE and Internationalization** 2023
Collaboration grant financed by the British Council between Robert Gordon University and Tecnológico de Monterrey
Collaboration grant financed by the British Council between University of Leeds, Universidad Autónoma de Yucatán and Tecnológico de Monterrey
[Grant acceptance](#)
[Invitation Letter](#)
- “Development and implementation of a support system for decision making for integral restoration and management of the Santiago River basin.”** 2023
The Innovation, Science and Technology Ministry of the State of Jalisco (SICYT by its acronym in Spanish)

and the Science and Technology State Council (COECyTJAL by its acronym in Spanish) through Jalisco's Scientific Development Fund (FODECIJAL by its acronym in Spanish). Project 10633-2023.

[RESULTADOS_FODECIJAL_2023.pdf](#)

"Harnessing the methanogenic potential of solid wastes and agro-industrial wastes generated in the state of Jalisco."

2023

Research collaboration with the Center of Excellence for Anaerobic Digestion (CEAD) at the University of York.

[Invitation University of York](#)

"Assessing the ecological and public health risks caused by the presence of persistent and emerging pollutants in Santiago River sediments".

2023

Research collaboration with the University of Leeds research group water@Leeds, the University of Birmingham and the University of Toronto Mississauga.

[Invitation University of Leeds](#)

[Invitation University of Birmingham](#)

[Invitation University of Toronto](#)

Production and utilization of bioenergy-inception and planning

2023

Energy Partnership Program between Mexico (Jalisco) and Denmark
Consultant

[Agreement Local Consultant](#)

[Technical Report](#)

Piloting the impact of protected agriculture in Mexico

2023

Eco-Business Fund S.A., SICAV-SIF (Eco-Business I Sub-Fund) Citibank Europe plc (Luxembourg Branch)
Consultant

Activity No. 10/2022

https://drive.google.com/file/d/10FjxGPoeRd-QC_TpmInhwESVajAlMmO/view?usp=sharing

Hackathon: Hidrohack 2023. Development of artificial intelligence based predictive models of the water quality index that contribute to the monitoring strategy for the Rio Santiago sanitation

2023

German Agency for International Cooperation (GIZ)

Consultant

Reference number: 18.2251.9-038.00

<https://drive.google.com/file/d/14g8AbfE3bpXXi20PfVTJwe3Lpn8bVr-Q/view?usp=sharing>

A circular bioeconomy strategy for tequila vinasses management: Analyzing the effects of soil irrigation on physicochemical parameters and microbial communities.

2022

Challenge-Based Research Funding Program 2022. Tecnológico de Monterrey.

Project ID: E026 - EIC-GI01 - A-T15 - D.

https://tec.mx/sites/default/files/inline-files/Call%20for%20proposals_2022.pdf

Assessing the ecological and public health risks caused by the presence of persistent and emerging pollutants in Santiago River sediments.

2022

Challenge-Based Research Funding Program 2022. Tecnológico de Monterrey.

Project ID: E049 - EIC-GI01 - A-T9 - D.

https://tec.mx/sites/default/files/inline-files/Call%20for%20proposals_2022.pdf

Circularity of microalgae-based wastewater treatment applied for the treatment of anaerobically digested livestock waste for climate change mitigation: a pilot scale prototype including bioflocculation, pollutants removal, and biomass harvesting

2022

Challenge-Based Research Funding Program 2022. Tecnológico de Monterrey.

Project ID: E010 - EIC-GI01 - A-T11 - E.

https://tec.mx/sites/default/files/inline-files/Call%20for%20proposals_2022.pdf

Determination of the ideal conditions for the use of tequila vinasses for irrigation.**2021-2022**

The Innovation, Science and Technology Ministry of the State of Jalisco (SICYT by its acronym in Spanish) and the Science and Technology State Council (COECyTJAL by its acronym in Spanish) through Jalisco's Scientific Development Found (FODECIJAL by its acronym in Spanish). Project 9784-2021.

https://www.coecytjal.org.mx/Plataforma/app/views/2021/FODECIJAL2021/Publicaci%C3%B3n%20de%20Resultados_FODECIJAL.pdf

Development of a decision support system based on multi-criteria based on water quality monitoring to identify priority areas for attention and prioritize the actions to be carried out in the upper basin of the Santiago River.**2021-2022**

The Innovation, Science and Technology Ministry of the State of Jalisco (SICYT by its acronym in Spanish) and the Science and Technology State Council (COECyTJAL by its acronym in Spanish) through Jalisco's Scientific Development Found (FODECIJAL by its acronym in Spanish). Project 9784-2021.

https://www.coecytjal.org.mx/Plataforma/app/views/2021/FODECIJAL2021/Publicaci%C3%B3n%20de%20Resultados_FODECIJAL.pdf

Diagnosis of the environmental performance of the berry supply chain in the state of Jalisco and generation of a strategy for the transition towards a sustainable model based on circular bioeconomy schemes.**2021-2022**

The Innovation, Science and Technology Ministry of the State of Jalisco (SICYT by its acronym in Spanish) and the Science and Technology State Council (COECyTJAL by its acronym in Spanish) through Jalisco's Scientific Development Found (FODECIJAL by its acronym in Spanish). Project 9748-2021.

https://www.coecytjal.org.mx/Plataforma/app/views/2021/FODECIJAL2021/Publicaci%C3%B3n%20de%20Resultados_FODECIJAL.pdf

Predictive support system for the recovery and comprehensive management of the upper Santiago River basin based on machine learning tools.**2020 - 2021**

The Innovation, Science and Technology Ministry of the State of Jalisco (SICYT by its acronym in Spanish) and the Science and Technology State Council (COECyTJAL by its acronym in Spanish) through Jalisco's Scientific Development Found (FODECIJAL by its acronym in Spanish). Project 8962-2020.

<http://www.coecytjal.org.mx/Plataforma/app/views/2020/FODECIJAL2020/Publicaci%C3%B3n%20ganadores%20FODECIJAL%202020.pdf>

Related publications

<https://www.mdpi.com/2073-4441/14/8/1235>

<https://www.mdpi.com/2073-4441/14/11/1687>

Valorization of agricultural and livestock waste produced in the Lerma-Santiago basin for its potential use in biogas production.**2019 - 2021**

The Innovation, Science and Technology Ministry of the State of Jalisco (SICYT by its acronym in Spanish) and the Science and Technology State Council (COECyTJAL by its acronym in Spanish) through Jalisco's Scientific Development Found (FODECIJAL by its acronym in Spanish). Project 7876-2019.

<https://www.coecytjal.org.mx/Plataforma/app/views/2019/FODECIJAL/Publicaci%C3%B3n%20de%20Resultados.pdf>

Related publications

<https://www.mdpi.com/2071-1050/13/14/8029>

Tequila vinasses as substrates to produce food additives with high protein value for monogastric animals.**2019 - 2021**

The Innovation, Science and Technology Ministry of the State of Jalisco (SICYT by its acronym in Spanish) and the Science and Technology State Council (COECyTJAL by its acronym in Spanish) through Jalisco's Scientific Development Found (FODECIJAL by its acronym in Spanish). Project 7947-2019

<https://www.coecytjal.org.mx/Plataforma/app/views/2019/FODECIJAL/Publicaci%C3%B3n%20de%20Resultados.pdf>

Related publications

<https://doi.org/10.3389/fceng.2022.1013873>
<https://doi.org/10.1016/j.biombioe.2022.106471>
<https://doi.org/10.3389/fenvs.2021.682093>

Diagnosis and development of a proposal for mosquito (*Culicidae*) population mitigation and control at the Guadalajara International Airport influence polygone. **2019**

Tecnológico de Monterrey and the Pacific's Airport Group (GAP by its acronym in Spanish)
https://drive.google.com/file/d/1feCINz9_IBLppz_HCd3cXT6oLAS62NRw/view?usp=sharing

Diagnosis of Food Loss and Waste in Jalisco **2019**

Executive Director of Environmental Protection and Management/Coauthor
[Technical Report.pdf](#)

Monitoring and assessment of the main water quality parameters in Lake Cajititlán to determine the cause of massive fish death. **2018**

Tecnológico de Monterrey and the Center for Research and Assistance in Technology and Design of the State of Jalisco (CIATEJ for its acronym in spanish).
https://drive.google.com/file/d/1wvODnAEX_rjYeynUOsaQz327nTYHZ1Ri/view?usp=sharing



Graduate students

Manuel García Becerra / CVU 786209 / Doctoral Degree in Biotechnology at Tecnológico de Monterrey **2025 (Start)**

Residues management and circular economy models en production lines of agave in Jalisco.

Juan Daniel Castanier Rivas / CVU 2050702 / Doctoral Degree in Biotechnology at Tecnológico de Monterrey **2024 (Start)**

Inoculum optimization of anaerobic digestions through microbiome engineering for the codegradation of agroindustrial waste and emergent contaminants.

Sofía Hernández Morales / CVU / Doctoral Degree in Biotechnology at Tecnológico de Monterrey **2024 (Start)**

María Fernanda Ramos Reyes / CVU 1277055 / Master's in Science with Specialization in Biotechnology at Tecnológico de Monterrey **2022 - 2024**

Circular economy: Tequila vinasse treatment for upcycling and downcycling.
[Graduation Certificate.pdf](#)

Carlos Daniel García López / CVU 1191992 / Doctoral Degree in Biotechnology at Tecnológico de Monterrey **2023 (Start)**

Decision-support system for energy self-sufficient wastewater treatment plants: integrating life cycle assessment to support investment allocation.

Fernanda E. Ibarra-Esparza / CVU 1151405 / Doctoral Degree in Biotechnology at Tecnológico de Monterrey **2023 (Start)**

Co-digestion of relevant agro-industrial waste streams through clustered anaerobic digestion systems for distributed energy generation.

Luis Fernando Amador / CVU 1048083/ Doctoral Degree in Biotechnology at Tecnológico de Monterrey **2022 (Start)**

Development of technological tools for monitoring water quality and communication of information related to Rio Santiago

Anaid López Sánchez/ CVU 1047919/ Doctoral Degree in Engineering Sciences at Tecnológico de Monterrey **2022 (Start)**

A life cycle assessment towards sustainable production chains of berries in Jalisco

Gary Ossmar Lara Topete/ CVU 1045534/ Doctoral Degree in Engineering Sciences at Tecnológico de Monterrey 2022 (Start)

Life cycle sustainability Assessment of priority waste streams generated in the Metropolitan Area of Guadalajara: baseline and potential circular economy scenarios.

Diego Diaz Vazquez/ CVU 1007688/ Doctoral Degree in Biotechnology at Tecnológico de Monterrey 2021 to DATE

Development of a decision support system based on multi-criteria algorithms to identify areas of attention and prioritize actions for the restoration of the Santiago River Basin.

Alberto Fernández del Castillo Barrón/CVU 966466/ Doctoral Degree in Biotechnology at Tecnológico de Monterrey 2021 to 2024

Environmental assessment of urban rivers through a Dual Lens approach: Machine Learning based Water Quality and Metagenomic Characterization of Contamination Effects.

[Graduation certificate.pdf](#)

Marycarmen Verduzco Garibay/ CVU 966473/ Doctoral Degree in Biotechnology at Tecnológico de Monterrey 2021 to DATE

Bacteria and arbuscular mycorrhiza dynamics in soils irrigated with raw, and neutralized tequila vinasses: Effects on environmental parameters and microbial communities.

Fernanda E. Ibarra-Esparza/ CVU 1151405/ Master's in Engineering Sciences at Tecnológico de Monterrey 2021 to 2023

A micro-and macro-scale look at the biochemical methanogenic potential of the organic fraction of municipal solid waste generated in a large city of a developing country.

Best thesis awarded with the "Rómulo Garza" award 2023.

https://repositorio.tec.mx/bitstream/handle/11285/651833/IbarraEsparza_TesisMaestriaFpdfa.pdf

María Fernanda Palafox Sola/CVU 922107/ Master of Science in Biotechnological Innovation at Tecnológico de Monterrey 2019 - 2022

Modeling growth kinetics and community interactions in microalgal monocultures and co-cultures for bioremediation of anaerobically digested swine wastewater

<https://hdl.handle.net/11285/649747>

Gary Ossmar Lara Topete/ CVU 1045534/ Master's in Engineering Sciences at Tecnológico de Monterrey 2019 - 2021

Integrated environmental assessment of municipal solid waste management scenarios in the Guadalajara Metropolitan Area, Mexico

<https://repositorio.tec.mx/handle/11285/645993>

Anaid López Sánchez/ CVU Master of Science in Biotechnological Innovation at Tecnológico de Monterrey 2019 - 2021

Microalgae-based livestock wastewater treatment and resource recovery: A circular bioeconomy approach

Diego Diaz Vazquez/ CVU 1007688 Master's Degree in Biotechnology at Tecnológico de Monterrey 2019 - 2021

Development of circular bioeconomy strategies for the integrated management of Tequila Vinasses

Best thesis awarded with the "Rómulo Garza" award 2021.

<https://repositorio.tec.mx/handle/11285/647344>

Alberto Fernández del Castillo Barrón/ / CVU 966466/ Master's Degree in Biotechnology at Tecnológico de Monterrey 2019 - 2020

Mathematical Modelling of a Domestic Wastewater Treatment System Combining a Septic Tank, an Up flow Anaerobic Filter, and a Constructed Wetland

<https://repositorio.tec.mx/handle/11285/645214>

Marycarmen Verduzco Garibay/ CVU 966473/ Master's Degree in Biotechnology at Tecnológico de 2019 - 2020

Monterrey

Characterization of the spatial variations in the structure and diversity of microbial communities within and between the stages of a wastewater treatment plant based on passive methods.

<https://repositorio.tec.mx/handle/11285/639377>



Courses taught at Tecnológico de Monterrey

Advanced topics on sustainable development	2022, 2024
Leadership for sustainable development, Master class	2020, 2021, 2022
Analysis of transport phenomena	2021, 2022, 2023, 2024
Sustainable use of water, Bachelor class	2020
Bioprocess engineering, Bachelor class	2018- 2020
Thermodynamics, Bachelor class	2018-2020



Conferences

United Nations Climate Change Conferences		
COP 29	Participation as an Observer, Baku, Azerbaijan. COP 29 Acknowledgement as Observer.pdf	2024
COP 28	Participation as an Observer, Dubai, United Arab Emirates.	2023
COP 27	Participation as an Observer, Sharm el-Sheikh, Egypt. https://www.youtube.com/watch?app=desktop&v=n2zNlslbLak	2022

Workshop: Desing of the Action for a Sustainable Future 2025

Organizer. Workshop with decision makers of state entities of environmental and water management.

IEEE Global Engineering Education Conference 2025 2025

Invited speaker with the topic:

“Circular Economy, Bioeconomy and Systems thinking in PhD Biotechnology Education.”

“Shaping plastic pollution perspectives of biotechnology students in a competence-based learning course vis systems thinking”

“A comprehensive exploration of Circular Economy and Bioeconomy principles in graduate Bioengineering Education”

London, United Kingdom.

[EDUCON 25 Summary](#)

[Certificate EDUCON 2025](#)

Tec Science Summit 2025

Invited to the panel of high impact multidisciplinary research projects with the topic: “Tecno-economic modelling of climate policies: analysis of the Mexican case.”

Monterrey, NL, Mexico.

[Diploma](#)

Seminar: Understanding microbial communities: a metagenomic approach with applications for freshwater ecosystems 2025

Invited speaker.

Baylor University, Waco, TX, US.

[Invitation Letter](#)

National Biologist's Day at University of Guadalajara Panel participante with the topic: "The impact of unsustainable practices in Jalisco's biodiversity" National Biologist's Day	2025
International Book Fair – Guadalajara 2024 Speaker with the topics: "Circularity for the Environmental Evaluation of waste streams generated by the Tequila industry" "Warming is coming: Planet Earth in an endless summer" Guadalajara, Mexico International Book Fair 1 International Book Fair 2	2024
14th European Symposium on Biochemical Engineering Sciences Speaker with the topic: "Maximizing energy production from agri-industrial and municipal wastes in Jalisco: analysis of feedstock effects on the biogas yield of anaerobic co-digestions." Denmark Technical University, Denmark. Programa ESBES 2024 Dinamarca.pdf	2024
British Council-Tec de Monterrey Alliance visit Organizer. Guadalajara, Mexico British Council-TEC GDL.pdf	2024
Civil Engineering PGR-led Conference Speaker with the topic: "Recovery of nutrients from wastewater and safe reuse in agriculture using microalgae: A novel circular bioeconomy approach." University of Leeds, Leeds, United Kingdom UoL Civil Engineering PGR-led Conference.pdf	2024
Natural Environment Research Council (NERC) Digital Gathering 2024 Poster presenter on the topic: "Development of a digital platform for water quality management and communication in Mexico" Email - NERC-2024.pdf	2024
Agri-food International Congress of Jalisco (CIA 2024) Organizer and Panel participant with the topic: Circular economy, sustainability and water in the Agave-Tequila and Livestock industries Evaluator of the Agrodathathon: Exploiting the power of data for future proof agrifood systems in the age of artificial intelligence. CIA 2024.jpg	2024
Robert Gordon University visit to Tec de Monterrey: Available master's programs Organizer	2024
Synergy Forum Panel speaker and organizer Diploma Synergy Forum	2024
Innovation in Engineering for Sustainability, University of Illinois Conference speaker with the topic: "Circular economy in action: Case studies from the sustainability and climate change laboratory." Webinar Innovation_Engineering_Symposium.pdf	2024
Seminar: The future of energy Organizer and conference speaker. Guadalajara, Mexico.	2024

First Nacional Dialogue Forum about the Carbon Border Adjustment Mechanism (CBAM) of the European Union in Mexico.

2024

Organizer and panel participant as Leader of the Sustainability and Climate Change HUB at Tecnológico de Monterrey

Guadalajara, Mexico

[Nota logística_Dialogo CBAM_GDL_Misael Gradilla ITESM \(1\).pdf](#)

International Conference on Algal Biomass, Biofuels and Bioproducts (AlgalBBB 2024)

2024

Co-author and invited as conference speaker with the topic:

“Life-cycle assessment of microalgae-based wastewater treatment pilot unit for enhancing livestock industry’s circular bioeconomy.”

Clearwater, FL, USA.

[Invitation Letter](#)

IEEE Global Engineering Education Conference

2024

Co-author and invited as conference speaker with the topic:

“Shaping Plastic Pollution Perspectives of Biotechnology Students in a Competence-Based Learning Course via Systems Thinking”

Kos, Greece.

[Presented Work](#)

International Conference on Basic Sciences, Engineering and Technology

2024

Co-author and invited as conference speaker with the topic:

“Reshaping campus perceptions: Life Cycle Assessment as a catalyst for embedding sustainability in waste management.”

Alanya, Turkey.

[Diploma and Abstract](#)

8th Green and Sustainable Chemistry Conference

2024

Co-author and invited as conference speaker with the topics:

“Technical feasibility of biochar from maize stover as a replacement of granulated activated carbon in water filters”

“Harnessing filamentous fungi and yeast through circular bioeconomy treatment of tequila vinasses”

“Distribution and ecological risk of heavy metals in Santiago River sediments”

Dresden, Germany

Strategic Curricular Mapping: innovating Graduate Programs and Enhancing Mexican Educational Partnerships

2024

Webinar Organizer

[Diploma](#)

XX National Congress of Biotechnology and Bioengineering

2023

Co-author and invited speaker with the topics:

“Biogas generation potential of anaerobic co-digestion of agro-industrial waste generated in the State of Jalisco.”

“Implementation of principal component analysis with geographic weight for spatial assessment of water quality of Santiago River.”

“Environmental impact evaluation of the protected production of blueberry through life cycle assessment: Insights from a developing country.”

“Life cycle assessment of Agave fiber reinforced composites and biocomposites: The case of Jalisco.”

“Development of software for sensors for determination of water quality in the Santiago River”

“Predictive modeling of the water quality index of the Santiago River”

“Valorization of Tequila vinasses through a treatment with yeasts and filamentous fungi.”

“Valorization of livestock residue through anaerobic digestion and microalgae treatment.”
“Tequila vinasses application *in situ* as a soil property enhancer.”
“Antibiotic resistance genes in a hypereutrophic subtropical lake in Jalisco, Mexico.”
“Bacterial characterization of a playa lake in Mexico.”

Ixtapa-Zihuatanejo, Mexico

2023

Lunch Talk at Alexander von Humboldt Institut für Internet und Gesellschaft

Invited as speaker with the topic: “AI, Predictive Modeling and Sustainability.”
Berlin, Germany.

Editor’s Conclave on the Global Rise of Thirsty Cities: Challenges and opportunities

Invited as panel speaker with the topic.
Guadalajara, Mexico.

2023

Mexico Carbon Forum

Panel Participant with the Topic: “Solutions based in technology: the transition towards a cleaner economy and emission reduction permanence.”
Querétaro, Querétaro, México.
[Dia 2 | Mexico Carbon Forum](#)

2023

Bioenergy Congress: “The role of bioengineering in the Mexican decarbonation”

Speaker with the topic: “Exploitation of methanogenic potential of solid and agro-industrial waste generated in the State of Jalisco.”
<https://youtu.be/fhhXnJ8rhHc?si=IKCPmGrqVAEKiQmW>

2023

Regional forum of digital transformation

Invited as panel speaker with the topic: “Climate action and technology: a call for action.”
Mexico City, Mexico.

2023

7th Green & Sustainable Chemistry Conference 2023

Invited as conference speaker with the topic: “Microalgae-based swine wastewater treatment (MbWT): a complete treatment unit for circular bioeconomy.”
Dresden, Germany.
[Access to the conference recall of this research](#)

2023

7th Green & Sustainable Chemistry Conference 2023

Invited as conference speaker with the topic: “Analyzing scenarios for organic waste management in a Mexican city: context-specific solutions based on life cycle assessment.”
Dresden, Germany.
[Access to the conference recall of this research](#)

2023

7th Green & Sustainable Chemistry Conference 2023

Invited as conference speaker with the topic: “Environmental impact evaluation of protected blueberry production through life cycle assessment: Insights from a developing country.”
Dresden, Germany.
[Access to the conference recall of this research](#)

2023

7th Green & Sustainable Chemistry Conference 2023

Invited as conference speaker with the topic: “Life cycle assessment of the management of Agave bagasse from the tequila industry to reinforce plastic composites.”
Dresden, Germany.
[Access to the conference recall of this research](#)

2023

The International Society for Ecological Modelling Global Conference 2023

Invited as a conference speaker with the topic: “Modelling community interactions and growth kinetics in microalgal mono- and co-cultures for bioremediation of swine wastewater.”
Scarborough, Canada.

2023

CIIE International Conference on Educational Innovation Panel participant. Topic: "Closing the gap between research and practice in climate action."	2023
Multi-stakeholder Dialogue- Artificial intelligence and sustainability. Event organized by the Alexander von Humboldt Institute for Internet and Society (HIIG) and the Digital Transformation Center (DTC) of Mexico GIZ. Conference speaker with the topic: "AI and Sustainability in Mexico: The case of water quality management" Mexico City, México.	2023
Water Week@tec Conference speaker with the topic: "Real challenges, science-based solutions: Sustainability and Climate Change Laboratory" Guadalajara, Jalisco, México. Water Week@Tec	2023
9th International Conference on Educational Innovation of the Monterrey Institute of Technology and Higher Education Conference speaker with the topic: "Closing the gap between research and practice for climate action" Monterrey, Nuevo León, Mexico. https://drive.google.com/file/d/1ikzH9unyjUJ6FK0VwuC9nL5bDJgVBj06/view?usp=sharing	2023
Climate labs network reunion Participant as member of the ITESM Sustainability and Climate Change Lab. Nancy, France.	2022
International Congress of the FEMSA Biotechnology Center: XV Years of Biotechnological Evolution and Innovation Conference speaker with the topic: "Modeling growth kinetics and community interactions in microalgal cultures for bioremediation of anaerobically digested swine wastewater". Monterrey, Nuevo León, Mexico.	2022
Energy Congress Jalisco Panel participant. Topic: "Future fuels". Guadalajara, Jalisco Mexico. https://aeej.jalisco.gob.mx/cej2022/	2022
Mexico Carbon Forum Panel participant. Topic: "The integral vision of Jalisco for the implementation of public policy". Zapopan, Jalisco, Mexico. https://www.youtube.com/watch?v=q5bjL3-MCRk https://www.mexicocarbon.com/	2022
Mexico Carbon Forum Panel participant. Topic: "The academy as an ally in the decision-making process regarding climate change and adaptation". Zapopan, Jalisco, Mexico. https://www.youtube.com/watch?v=14M9PMgxZfM https://www.mexicocarbon.com/	2022
National Ethanol Conference: Zeroing in on New Opportunites Attendant. New Orleans, Louisiana, USA.	2022
Semana Nórdica Panel participant. Topic: "Resource efficiency solutions: Recycled and biologically based products". Digital event. https://www.sostenibilidadnordica.mx/	2021
Volunteer Environmental Compliance Processes Diplomat Program (at CUCEA, University of Guadalajara)	2021

Facilitator of the “Water Quality” module. Zapopan, Jalisco, Mexico.

50 Anniversary of the Mechanical and Electrical Engineers College of the State of Jalisco (CIMEJ, for its acronym in Spanish) 2020
Panel participant. Topic: “Responsible waste management”. Guadalajara, Jalisco, Mexico.

Alliance for Climate Action in the AMG. 2020
Panel participant. Topic: “Residues and Covid-19 in the AMG”. Digital event.

Seminar of the Advanced Studies Program in Sustainable Development and Environment (LEAD Mexico) 2019
Conference speaker with the topic: "Transverse issues and Social Development". Guadalajara, Jalisco, Mexico.

Environment and Climate Change Forum of the State of Jalisco 2019
Panel participant. Topic: “Environmental impacts of food management”. Guadalajara, Jalisco, Mexico.

V Symposium of Biochemical Engineering 2019
Conference speaker with the topic: “Bioprocesses with environmental applications”. Lagos de Moreno, Jalisco, Mexico.

XXV National Conference on Hydraulics 2018
Conference speaker with the topic: “Preliminary study of the water quality index in Lake Cajititlán and its massive fish death predictive potential”. Mexico City, Mexico.

Second IFAC Conference on Modelling, Identification and Control of Nonlinear Systems 2018
Conference speaker with the topic: “Differential Neural Network Identifier for Parameter Determination of a Mixed Microbial Culture Model”. Guadalajara, Jalisco, Mexico.

VI National Conference of Limnology 2014
Conference speaker with the topic: “Bioaccumulation patterns of Cd, Cu, Se and Zn in tissues of cultivated catfish (*Ictalurus punctatus*) used as active biomonitor in lake Chapala, México”. Mexico City, Mexico.

XXXI AMIDIQ National Meeting (AMIDIQ is the acronym in spanish for Mexican Academy of Research and Teaching in Chemical Engineering) 2013
Conference speaker with the topic: “Carp and catfish as heavy metals biomonitors in Lake Chapala, Mexico”. Mazatlán, Sinaloa, Mexico.

First scientific-technologic innovation forum for the sustainable fishing and aquaculture production in the State of Jalisco. 2013
Conference speaker with the topic: “Metal accumulation in catfish in Lake Chapala”. Guadalajara, Jalisco, Mexico.



Courses completed

Emerging contaminants in Water: Challenges and solutions 2024
CADI. ITESM Guadalajara Campus.
[CertificateOfCompletion.pdf](#)

Life Cycle Assessment and Use of SimaPro 2022
CADI. ITESM Guadalajara Campus.
[2214cSP01_MisaelSebastian.pdf](#)

Agroindustrial residues biodigestion 2022
CADI. ITESM Guadalajara Campus. Anaero technology company and researchers from York University.

[CertificateOfCompletion \(5\).pdf](#)

Use of SimaPro: Life Cycle Assessment

2022

CADI. ITESM Monterrey Campus.

[CertificateOfCompletion \(7\).pdf](#)

The abundance cycle: accelerating sustainable development

2017

CADI. ITESM Guadalajara Campus.

SuperPro Designer Training Course

2017

CADI. ITESM Monterrey Campus.

Sustainable frontiers: competencies for leading change through sustainable innovation

2016

CADI. ITESM Guadalajara Campus.

Sustainable frontiers in an era of global challenges: unlocking change through leadership and innovation.

2016

CADI. ITESM Guadalajara Campus.

Innovation and Sustainability Workshop.

2015

CADI. ITESM Guadalajara Campus.

Systems Thinking towards sustainable development of corporations.

2015

CADI. ITESM Guadalajara Campus.

Good laboratory practice

2015

Nao Consultores

Background in Educational Sciences



Education related publications

González-López, M. E., Barajas-Álvarez, P., **Gradilla-Hernández, M. S., (2024).** Shaping Plastic Pollution Perspectives of Biotechnology Students in a Competence-Based Learning Course via Systems Thinking. *2024 IEEE Global Engineering Education Conference*. <https://doi.org/10.1109/EDUCON60312.2024.10578923>

Barajas-Alvarez, P., González-López, M. E., Sylveira-Leon, G., **Gradilla-Hernández, M. S.,** García-Cayuela, T., **(2024).** Life Cycle Assessment as a Catalyst for Embedding Sustainability in Waste Management Practices. *The Eurasia Proceedings of Science, Technology, Engineering & Mathematics*. 28, 308–316. <http://dx.doi.org/10.55549/epstem.1521952>

Gradilla-Hernández, M. S, Senés-Guerrero C., García-Gamboa R. (2023). Developing key competencies for sustainable development in a university orchard: students perspectives. In: Conference proceedings of the 9th International Conference on Educational Innovation of the Monterrey Institute of Technology and Higher Education (Published in spanish as: Desarrollando competencias clave para el Desarrollo sostenible en un huerto universitario: perspectivas de los Estudiantes. En: Memorias del 4º Congreso Internacional de Innovación Educativa del Tecnológico de Monterrey). ITESM Monterrey Campus. <https://drive.google.com/file/d/1Z43wLNJqJC21TfyxbQvXh-FAE2X8nUH/view?usp=sharing>

Wood-Caballero, M. W., León-Morán, R. M., Sánchez-Ruano, D, **Gradilla-Hernández, M. S. &** Encinas-Soto, A. (2022). Sustainable vision in the Guadalajara Campus. In: The university as a co-creator of the future. (Published in Spanish as Visión sostenible en el Campus Guadalajara. En: La universidad como cocreadora del future), TIRANT HUMANIDADES, Ciudad de México, ISBN: 978-84-19376-20-6.

Aceves-Ávila, C. D. and **Gradilla-Hernández, M. S.** (2017). Education in the XXI century: multi, inter and transdisciplinary and the promotion of the capabilities for sustainable development. In: state Government of Jalisco (Eds.) State Plan for the Education and Environmental Culture of the State of Jalisco, Chapter 2 (pp. 37-39). (Published in spanish as: La educación del siglo XXI: multi, inter y transdisciplinariedad y la promoción de capacidades para el desarrollo sustentable. En: *Plan de Educación y Cultura Ambiental del Estado de Jalisco, Capítulo 2*). Jalisco, Mexico. ISBN 978-607-97786-9-9.

Gradilla-Hernández, M. S. (2017). Biotechnology in the community: creating a sustainable action plan. In: Conference proceedings of the 4th International Conference on Educational Innovation of the Monterrey Institute of Technology and Higher Education (Published in spanish as: Biotecnología en la comunidad: generando un plan de acción sustentable. En: *Memorias del 4º Congreso Internacional de Innovación Educativa del Tecnológico de Monterrey*). ITESM Monterrey Campus.

Gradilla-Hernández, M. S. (2017). Contribution of the academic disciplines to the development of competences for sustainable development in students: the perspective of the faculty members (Published in spanish as: Contribución de las disciplinas académicas al desarrollo de competencias para el desarrollo sostenible en los estudiantes: la perspectiva de los académicos).

Hernández-Yáñez, M.L. y **Gradilla-Hernández, M. S.** (2015). Higher education for sustainable development. In: Conference Proceedings of the XXX Latin American Sociology Conference ALAS (Published in spanish as: Educación superior para el desarrollo sustentable. En: *Memorias del XXX Congreso Latinoamericano de Sociología ALAS*). Latin American Sociology Association. ISBN: 978-9968-9502-4-4.



Conferences

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| <p>10th IEEE International Smart Cities Conference</p> <p>Speaker with the Topic: Bridging Disciplines for Sustainability: Exploring Faculty Perspectives on Key Competencies for Sustainability</p> <p>Conference-a4-IEEE Gradilla Hernández.docx</p> | 2024 |
| <p>4º International Conference on Educational Innovation of the Monterrey Institute of Technology and Higher Education</p> <p>Conference speaker with the topic: “Biotechnology in the community: creating a sustainable action plan”. Monterrey, Nuevo León, México.</p> | 2017 |
| <p>XXX Latin American Sociology Conference ALAS</p> <p>Conference speaker with the topic: “Higher education for sustainable development”. San Jose, Costa Rica.</p> | 2015 |



Courses completed

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|---|-------------|
| <p>Educational Skills Development Program (PDHD for its acronym in Spanish)</p> <p>ITESM Guadalajara Campus.</p> | 2013 |
| <p>Educational Orientation Counselling Program</p> <p>ITESM Guadalajara Campus.</p> | 2013 |
| <p>Diploma course in Current Educational Trends</p> <p>ITESM Guadalajara Campus.</p> | 2013 |