

Name Dr. JORGE ALEXANDER ROJAS VARGAS

Affiliation Postdoctoral Associate
Departments of Biology and Microbiology & Immunology, Schulich School of
Medicine and Dentistry. University of Western Ontario, London, Canada.
03/2023 - Present

Personal Information CURP: ROVJ861206HNEJRR04
Mexican Residency Status: Temporal with Work Permit
Country of Citizenship: Colombia

Contact Information

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Profile

Disciplines Trained Biochemistry, Chemical Engineering, Philosophy, Counselling,
Career Education

Research Disciplines Biochemistry, Molecular Biology, Water and Environment

Areas of Research Bioinformatics, Genomics, Bacteria, Microorganisms,
Microbiome, Bioremediation, Marine Environment

Fields of Application Environment, Public Health, Natural Resources

Work Experience

Academic Lecturer
Course: Comparative Genomics of Prokaryotes. Department of Science
– Biochemistry and Molecular Biology. Autonomous University of
Morelos State (UAEM), Cuernavaca, Mexico. 08/2021 – 12/2021

Academic Lecturer
Courses: Biochemistry, Chemistry, Thermodynamics, Heat Transfer.
Departments of Engineering and Health Sciences. Antonio Nariño
University, Neiva, Colombia. 02/2015 – 12/2018

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| Academic | Lecturer Courses: Chemistry, Thermodynamics. Department of Engineering, Corporacion Universitaria del Huila (CORHUILA), Neiva, Colombia. 08/2015 – 12/2018 |
| Oil & Gas Industry | Cementation Technical and Sales Engineer Cementaciones Petroleras Venezolanas CPVEN, Neiva, Colombia 05/2012 – 11/2014 |
| Consultant | Engineer Assessor, Project design and quality reports e-QUAL Consultoria y Servicios Ambientales, Bogotá, Colombia 12/2010 – 05/2012 |

Academic and Training Background

Academic

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| 01/2019 – 03/2023 | Doctorate, Sciences, Biochemistry, Universidad Nacional Autónoma de México (UNAM), Cuernavaca, Mexico Supervisors: Liliana Pardo López; Fidel Alejandro Sánchez Flores; Alexei Licea |
| 12/2019 | Pedagogy and Teaching - Graduate Certificate in Educational Studies, Fundación Universitaria del Área Andina, Bogotá, Colombia Research Disciplines: Counselling, Career Education |
| 01/2016 – 12/2017 | Master's Thesis, Sustainable Development and Environment, Biocomposites, Universidad de Manizales, Manizales, Colombia Supervisors: Daniel Roberto Hernandez Ochoa; Yasel Costa |
| 01/2009 – 03/2012 | Bachelor's Equivalent, Canonical Bachelor's in Philosophy, Universidad Pontificia Bolivariana, Medellin, Colombia |
| 02/2003 – 03/2008 | Bachelor's, Chemical Engineering, Industrial Automation, Universidad Nacional de Colombia, Bogotá, Colombia |

Training

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| 02/2025 – 03/2025 | Advanced Course in Metabolomics University of Zacatecas, Zacatecas, Mexico, 8 hours |
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| 03/2021 | Introduction to Mass Spectrometry Chemistry Institute, UNAM, CDMX, Mexico, 12 hours |
| 02/2021 | Gas Chromatography Quantitative Analysis Chemistry Institute, UNAM, CDMX, Mexico, 12 hours |
| 10/2020 – 11/2020 | Bioinformatic Tools for NGS Data Analysis National Laboratory for Technological Support for Genomic Sciences, Cuernavaca, Mexico, 80 hours |
| 08/2020 – 12/2020 | Introduction to Bioinformatics Center for Research in Cellular Dynamics, UAEM, Cuernavaca, Mexico, 80 hours |

Significant Accomplishments

- As a first-generation scientist from a low-income background, I have firsthand experience of the challenges of navigating a world where the path to success is often filled with barriers. My journey has been defined by perseverance, adaptability, and a deep commitment to scientific discovery.
- Conceptualized and led the development of HADEG, the largest curated database of protein sequences related to hydrocarbon degradation and biosurfactant production. This resource, published in 2023, has already garnered 17 citations and serves as a key reference in the field.
- Designed Mexico's first bacterial consortium for the biodegradation of light crude oil in marine environments, product of my Ph.D. research. This work was part of a bigger project funded by PEMEX for the study about the Gulf of Mexico.
- During my first postdoctoral appointment, I contributed to the largest metabarcoding study to date on the vaginal microbiome of transgender individuals. I am the first author of the upcoming publication, which aims to provide a scientific basis for developing strategies to mitigate bothersome symptoms in a historically marginalized group, advocating for healthcare equality.
- Mentored and supervised sixteen undergraduate students in my hometown, Neiva, including eleven in a single year (2018), supporting young researchers in their academic and professional growth.

Recognitions and Awards

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| 05/2025 – Present | CANSSI Postdoctoral Fellowship in Genome Data Science – 50,000 CAD per year. Ontario Regional Centre of the Canadian Statistical Sciences Institute (CANSSI) Prize / Award |
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| 03/2024 | Postdoctoral Sprint Research Forum - 2nd place - 500 (Canadian dollar). University of Western Ontario Prize / Award |
| 12/2023 | Finalist CINVESTAV UGA-LANGEBIO Award for Best Doctoral Thesis. CINVESTAV (Mexico) Distinction Research Disciplines: Biochemistry |
| 03/2023 | Honorable Mention - Doctorate in Sciences (Biochemistry). Universidad Nacional Autónoma de Mexico Distinction |
| 10/2022 | Travel Award - Connections Across Borders - 250 (United States dollar). Society for the Study of Evolution (USA) Prize / Award |
| 02/2019 – 02/2023 | CONACYT Doctoral Fellowship - 39,000 (United States dollar) CONACYT - Government of Mexico Prize / Award |
| 11/2017 | Laureate Thesis – Master’s degree in Sustainable Development and Environment. Universidad de Manizales - Colombia Distinction |
| 03/2008 | Honorable Mention - Chemical Engineering. Universidad Nacional de Colombia Distinction Research Disciplines: Chemical Engineering |

Teaching Activities

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| 2021/8 – 2021/12 | Comparative Genomics of Prokaryotes, Universidad Autónoma del Estado de Morelos Cuernavaca, México |
| 2017/8 – 2018/12 | Thermal Power Generation, Universidad Antonio Nariño, Neiva, Colombia |
| 2017/8 – 2018/12 | Chemistry and Biochemistry, Universidad Antonio Nariño, Neiva, Colombia |
| 2017/8 – 2017/12 | Inorganic Chemistry, Corporación Universitaria del Huila, Neiva, Colombia |

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| 2016/2 – 2018/12 | Thermal Cycles, Universidad Antonio Nariño, Neiva, Colombia |
| 2016/2 – 2016/6 | Research Seminary, Universidad Antonio Nariño, Neiva, Colombia |
| 2015/8 – 2016/6 | Humanistic Studies, Universidad Antonio Nariño, Neiva, Colombia |
| 2015/8 – 2018/12 | Thermodynamics, Universidad Antonio Nariño, Neiva, Colombia |
| 2015/8 – 2018/12 | Thermodynamics, Corporación Universitaria del Huila, Neiva, Colombia |
| 2015/8 – 2018/12 | Heat Transfer, Universidad Antonio Nariño, Neiva, Colombia |
| 2015/2 – 2018/12 | General Chemistry, Universidad Antonio Nariño, Neiva, Colombia |

Mentoring Activities

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| 2022/1 - 2022/12 | Principal Supervisor, Universidad Autónoma del Estado de Morelos Number of Mentorees: 1 I was the principal supervisor of the Undergraduate Final Work entitled "Characterization of Light Crude Oil Degradation With a Consortium of Non-Pathogenous Marine Bacteria of the Gulf of Mexico" |
| 2018/8 - 2018/12 | Principal Supervisor, Universidad Antonio Nariño Number of Mentorees: 2 Electromechanical Engineering Undergraduate Final Work entitled "Improvement in the cooling system guide bearing of the Francis turbine, Betania Hydroelectric Power Plant" |
| 2018/8 - 2018/12 | Principal Supervisor, Universidad Antonio Nariño Number of Mentorees: 2 Mechanical Engineering Undergraduate Final Work entitled "Characterization of cylindrical profiles of composite material with natural rice hull reinforcement" |
| 2018/8 - 2018/12 | Principal Supervisor, Universidad Antonio Nariño Number of Mentorees: 1 Mechanical Engineering Undergraduate Final Work entitled "Redesign of a coffee dryer with biogas fuel" |
| 2018/1 - 2018/6 | Principal Supervisor, Universidad Antonio Nariño Number of Mentorees: 2 |

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| | Mechanical Engineering Undergraduate Final Work entitled "Mechanical characteristics of rice husk as bioreinforcement in a wood colbon matrix composite material for application in the furniture and interior carpentry industry" |
| 2018/1 - 2018/6 | Principal Supervisor, Universidad Antonio Nariño Number of Mentorees: 2 Mechanical Engineering Undergraduate Final Work entitled "Calculations for the design of a micro-turbine to take advantage of the kinetic energy of household drinking water" |
| 2018/1 - 2018/6 | Principal Supervisor, Universidad Antonio Nariño Number of Mentorees: 2 Mechanical Engineering Undergraduate Final Work "Characterization of mechanical properties in biocomposite materials based on rice husk through vacuum infusion processes" |
| 2017/1 - 2017/6 | Principal Supervisor, Universidad Antonio Nariño Number of Mentorees: 2 Mechanical Engineering Undergraduate Final Work entitled "Design and characterization of a biocomposite from coffee silverskin" |
| 2016/8 - 2016/12 | Principal Supervisor, Universidad Antonio Nariño Number of Mentorees: 1 Electromechanical Engineering Undergraduate Final Work entitled "Methodological study for the reduction of technical losses in the distribution transformers of Electrohuila S.A. E.S.P." |
| 2016/8 - 2016/12 | Principal Supervisor, Universidad Antonio Nariño Number of Mentorees: 2 Mechanical Engineering Undergraduate Final Work entitled "Design of PET waste injection machine for the manufacture of micro sprinklers" |

Research Outputs

Published Journal Articles

1. Pila-Lacuta, S., Paucar, D., **Rojas-Vargas, J.**, Rodríguez-Cruz, U.E., Sierra, J.L., Castelán-Sánchez, H.G., Quispe-Ricalde, M.A. (2025) Isolation of a potentially arsenic-resistant *Halomonas elongata* strain (ml10562) from hypersaline systems in the Peruvian Andes, Cusco. PloS one. 20(4).
Co-author. <https://doi.org/10.1371/journal.pone.0320639>
Number of Contributors: 7
2. Castelán-Sánchez, H.G., Fernández Dodero, J.V., **Rojas-Vargas, J.**, Martínez-Ocampo, F., Hurtado-Ramírez, J.M., Ríos-Vázquez, D.I., Sánchez-Alonso, P.,

- Vazquez-Cruz, C., Rojas-Ruiz, N.E. (2025). Thermophilic *Pseudomonas aeruginosa* strain Ch39 isolated from Chignahuapan hot springs in Puebla, Mexico. Letters in Applied Microbiology. 78(4).
Co-author. <https://doi.org/10.1093/lambio/ovaf059>
Number of Contributors: 9
3. Miranda-López, D.C., Pérez-Rueda, E., **Rojas-Vargas, J.**, Hernández Cortez, C., Saldaña-Padilla, A., Castelán-Sánchez, H.G., Castro-Escarpulli, G. (2024). Comprehensive comparative analysis of the periodontal pathogen *Porphyromonas gingivalis*: exploring the pan-genome, the reconstruction of the gene regulatory network and genome-scale metabolic network. Letters in Applied Microbiology. 77(5)
Co-Author. <https://doi.org/10.1093/lambio/ovae048>
Number of Contributors: 7
4. Miranda-López, D.C., Pérez-Rueda, E., **Rojas-Vargas, J.**, Hernández Cortez, C., Saldaña-Padilla, A., Castelán-Sánchez, H.G., Castro-Escarpulli, G. (2024). Comprehensive comparative analysis of the periodontal pathogen *Porphyromonas gingivalis*: exploring the pan-genome, the reconstruction of the gene regulatory network and genome-scale metabolic network. Letters in Applied Microbiology. 77(5)
Co-Author. <https://doi.org/10.1093/lambio/ovae048>
Number of Contributors: 7
5. **Rojas-Vargas, J.**, Rebollar, E.A., Sanchez-Flores, A., Pardo-López, L. (2024). A comparative genomic study of a hydrocarbon-degrading marine bacterial consortium. PLoS ONE.
First Listed Author. <https://doi.org/10.1371/journal.pone.0303363>
Number of Contributors: 4
6. Villacís, J., Castelán-Sánchez, H.G., **Rojas-Vargas, J.**, Rodríguez-Cruz, U.E., Albán, V., Reyes, J.A., Meza- Rodríguez, P.M., Dávila-Ramos, S., Villavicencio, F., Galarza, M., Gestal, M.C. (2023). Emergence of *Raoultella ornithinolytica* in human infections from different hospitals in Ecuador with OXA-48-producing resistance. Front. in Microbiology. 14
First Listed Author. <https://doi.org/10.3389/fmicb.2023.1216008>
Number of Contributors: 11
7. **Rojas-Vargas, J.**, Castelán-Sánchez, H.G., Pardo-López, L. (2023). HADEG: A Curated Database of Hydrocarbon Aerobic Degradation Enzymes and Genes. Computational Biology and Chemistry. 107.
First and Corresponding Author. <https://doi.org/10.1016/j.compbiolchem.2023.107966>
Number of Contributors: 3
8. Romero-Gonzalez LE, **Rojas-Vargas J**, Muriel-Millan LF, Bustos-Martinez J, Bustamante VH, Pardo-Lopez L. (2023). Genomic and phenotypic characterization of *Pseudomonas* sp. GOM7, a novel marine bacterial species with antimicrobial activity against multidrug-resistant *Staphylococcus aureus*. PlosONE. 18(7)
First Listed Author. <https://doi.org/10.1371/journal.pone.0288504>
Number of Contributors: 6
9. **Rojas-Vargas, J.**, Muriel-Millán, L.F., Pardo-López, L. (2023) Draft genome sequence of *Pseudomonas* sp. GOM6, a lipolytic strain isolated from seawater of the Gulf of Mexico. MRA Journal. DOI: 10.1128/MRA.00348-23.
First Listed Author. <https://doi.org/10.1128/MRA.00348-23>
Number of Contributors: 3
10. **Rojas-Vargas, J.**, Adaya, L., Lacerda, A.L., Pedrotti, M.L., Sanchez-Flores, A.,

Pardo-López, L. (2023) Draft Genome Sequences of Six Bacteria Isolated from Plastic Samples of the Mediterranean Sea. MRA Journal, DOI: 10.1128/MRA.00794-23.

First Listed Author. <https://doi.org/10.1128/MRA.00794-23>

Number of Contributors: 6

11. Cicala, F., Ramírez-Delgado, D., Gómez-Reyes, R., Martínez-Porchas, M., **Rojas-Vargas, J.**, Pardo- López, L., Licea-Navarro, A.F. (2022). Detection of human pathogenic bacteria in rectal DNA samples from *Zalophus californianus* in the Gulf of California, Mexico. Scientific Report.

Co-Author. <https://doi.org/10.1038/s41598-022-18903-4>

Number of Contributors: 7

12. **Rojas-Vargas, J.**, Adaya, L., Silva-Jiménez, H., Licea-Navarro, A.F., Sanchez-Flores, A., Gracia, A., Pardo- López, L. (2022). Oil-Degrading Bacterial Consortium from Gulf of Mexico Designed by a Factorial Method, Reveals Stable Population Dynamics. Front. In Marine Sci. Marine Poll. 9

First Listed Author. <https://doi.org/10.3389/fmars.2022.962071>

Number of Contributors: 7

13. Rosas-Díaz, J., Escobar-Zepeda, A., Adaya, L., **Rojas-Vargas, J.**, Cuervo-Amaya, D. H., Sánchez-Reyes, A., Pardo-López, L. (2022). *Paenarthrobacter* sp. GOM3 is a novel marine species with monoaromatic degradation relevance. Front. in Microbiology. 12.

Co-Author Published. <https://doi.org/10.3389/fmicb.2021.713702>

Number of Contributors: 7

14. **Rojas-Vargas, J.**, González-Sánchez, R., Sánchez-Flores, A., Licea-Navarro, A.F., Pardo-López, L. (2022). Complete genome sequence of *Halopseudomonas aestusnigri* strain GOM5, isolated from asphalt marine sediments of the Gulf of Mexico. MRA Journal.

First Listed Author Published. <https://doi.org/10.1128/mra.01222-21>

Number of Contributors: 5

Unpublished Journal Articles

1. **Rojas-Vargas, J.**, Wilcox, H., Monari, B., Gajer, P., Zuanazzi, D., Shouldice, A., Parmar, R., Haywood, P., Tai, V., Krakowsky, Y., Potter, E., Ravel, J., and Prodger, J.L. (2025). The Neovaginal Microbiota, Symptoms, and Local Immune Correlates in Transfeminine Individuals with Penile Inversion Vaginoplasty. Under review in *Cell Reports Medicine*. <https://doi.org/10.1101/2025.03.14.643288>
2. Monari, B., Wilcox, H., Haywood, P., Gajer, P., Rojas-Vargas, J., Zuanazzi, D., Rutt, L., Shouldice, A.C., Parmar, R., Waetjen, L.E., Krakowsky, Y., Potter, E., Prodger, J., Ravel, J. (2025) The vaginal microbiota, symptoms, and local immune correlates in transmasculine individuals using sustained testosterone therapy. Under review in *Cell Reports Medicine*. <https://doi.org/10.1101/2025.03.14.643255>
3. **Rojas-Vargas, J.**, Samperio-Ramos, G., Camacho-Ibar, V., Pajares, S. (2025). Taxonomic and functional stability of sedimentary microbial communities along a Mexican coastal lagoon. In preparation to be sent to *the ISME Journal*.

Chapter of Book

Under review

Rojas-Vargas, J., Esquivel-Hernández, D.A., Moreira Uribe, I., Hernandez-Valdes, J.A., Gutierrez, T., Vázquez-Rosas-Landa, M.

(2025). Chapter 5: Frontiers and advances in marine hydrocarbon bioremediation. ISMOS9 Book. Taylor & Francis Group.

Other Contributions

1. **Rojas-Vargas, J.,** Pardo-Lopez,L. (2024). Diseñando un consorcio microbiano. Ciencia Cakotanu, 4 (4), 2-4.
2. **Rojas-Vargas, J.,** Pardo-Lopez,L. (2023). El viaje del petróleo en el mar: lo que se esconde bajo la superficie. La Unión de Morelos, 3 de abril.