

MIRNA VAZQUEZ ROSAS LANDA

As a postdoctoral fellow at the Baker Lab¹, I am studying the oceans microbial communities with a focus in their metabolic and phylogenetic diversity.

My interest in bioinformatics and genomics took me to my first postdoc at the Genomics and transcriptomics lab at the INECOL². Where I used the pan genome paradigm to design a method to identify a phytopathogenic fungus that was killing trees at the Mexican-US border.

I did my Ph.D. at the Ecology Institute at the UNAM³ in Mexico City. During this time, I studied the landscape genomics of a rare lineage of Vibrionaceae isolated from Cuatro Ciénegas⁴, looking for the genes that could explain the adaptation to this ultra-oligotrophic environment.

I enjoy teaching and sharing knowledge, and I love the R community. I started using R when I became part of the CDSB⁵ and Rladies community⁶ and then a co-organizer of RLadies Xalapa⁷, a safe place for minorities to learn how to code.



View this CV online at: <https://mirnavazquez.netlify.app/media/resume.html>

EDUCATION

2017
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2012

● Ph.D. in Sciences

National Autonomous University of Mexico, Ecology Institute.
 Mexico City, MX

- **Title:** Patterns of diversification and adaptation of the Vibrionaceae family. The case of Cuatro Ciénegas.
- **Advisor:** Dr. Valeria Souza Saldivar.
- **Description:** I examined the evolutionary footprints of local adaptation in the genomes of bacteria isolated from a highly oligotrophic environment in Cuatro Ciénegas (CCB), Mexico. I obtained 200 axenic isolates of Vibrionaceae, a group of bacteria with a cosmopolitan distribution, from several ponds around the CCB aquatic system. I identified the patterns of genetic variation among Vibrionaceae isolates, looking for signals of adaptation to structured (Water column) and non-structured (Sediments) environments within the ponds; I analyzed whether the recombination patterns were associated with these environments or constrained to the lineage history. Since several members of Vibrionaceae possess pathogenic relatives, I also evaluate the hypothesis that the members of Vibrionaceae isolated from Cuatro Ciénegas (CCB) had no pathogenic genomic elements, under the assumption that bacteria from CCB rarely get into contact with other bacteria, like oceanic Vibrionaceae.

2011
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2007

● B.Sc. in Biology

National Autonomous University of Mexico, FES Iztacala
 Mexico City, MX

CONTACT

 mirna@austin.utexas.edu

 [ORCID](#)

 [Google Scholar](#)

 [MirnaVRL](#)

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 [MirnaVRL](#)

LANGUAGE SKILLS



Made with the R package [pagedown](#).

The source code is available on github.com/nstrayer/cv.

Last updated on 2022-03-17.



RESEARCH EXPERIENCE

current
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2020

● **Postdoctoral fellow**

The University of Texas at Austin, [Marine Microbial Ecology Lab](#)
📍 Austin, USA.

- Currently studying the ecology and evolution of microbes by understanding their metabolism, using metagenomics.
- **Advisor:** Brett Baker

2020
|
2017

● **Postdoctoral fellow**

Ecology Institute, A.C. [Genomics and transcriptomics lab](#) 📍 Xalapa, MX.

- I studied the interaction among plants-insects-microbes. - I designed a diagnosis system to identify *Fusarium Kuruoshio* using genomics. - I studied the defense mechanisms of *Persea americana* var. Hass to the attack of the Mexican Fruit Fly, using transcriptomics. - I analyzed the microbiome of the Mexican Fruit Fly.
- **Advisor:** Martin Aluja and Enrique Ibarra-Laclette

2015

● **Guest Research**

The University of Toronto. [Guttman Laboratory of Pathogen Genomics and Evolution](#)
📍 Toronto, CA

- Realized the pan-genome analysis of the genomes that I used for my PhD thesis.
- **Advisor:** David Guttman

2014

● **Guest Research**

National Laboratory of Genomics for Biodiversity 📍 Irapuato, MX

- I learned how to assemble and annotate genomes.
- **Advisor:** Enrique Ibarra-Laclette

2011

● **Guest Research**

Center for Research and Advanced Studies of the National Polytechnic Institute
📍 Irapuato, MX

- I designed a bacteria that was capable of sensing the arsenic concentrations in water.
- **Advisor:** Agustino Martinez Antonio


FUNDED PROPOSALS

2022
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2019

- **Frontiers in Science research grant by National Council for Science and Technology (CONACyT in Spanish)**
Elucidate the potential effects of climate change on the growing problem of altitudinal expansion and host shifts in agricultural pests.
 Xalapa, MX.
· Co-written with PI Martin Aluja

GRANTS APPLIED

2019

- **Postdoctoral Scholar Program**
The interplay between community composition, metabolic interactions, and strain level pan-genome diversity of diatoms and their epibiotic bacteria.
 Woods Hole Oceanographic Institution, USA
· Individual Postdoc proposal

2018


- **Young professor (Catedra) research grant by National Council for Science and Technology (CONACyT in Spanish)**
Bioinformatics for the generation and interpretation of omic data linked to the Mexican fruit production and the optimization of the biorational management of Fruit Flies (Diptera: Tephritidae).
· Co-written with PI Martin Aluja.

HONORS AND AWARDS


2019

- **Member of the national system of researchers (SNI in Spanish) at the candidate level.**


2016

- **Support program for graduate students (PAEP in Spanish). Viatical support to attend an Anvio workshop in Montreal.**
 Montreal, CA.

2015

- **Support program for graduate students (PAEP in Spanish). Viatical support to make a research stay at the Guttman Lab.**
 Toronto, CA

2015

- **Support program for graduate students (PAEP in Spanish). Viatical support to attend to Gordon Research Conference on Microbial Population Biology**
 New Hampshire, USA

- 2012 ● **Scholarship from CONACyT to perform a PhD. at the Ecology Institute, UNAM.**
📍 Mexico City, MX
- 2010 ● **Scholarship of Academic Excellence for Student Mobility, UNAM, and Coca-Cola to study for one year at the Complutense University of Madrid at the faculty of science.**
📍 Madrid, ES



PUBLICATIONS

- 2022 ● **Integrating proteomics and metabolomics approaches to elucidate the ripening process in white Psidium guajava**
- Monribot-Villanueva, Juan L; Altuzar-Molina, Alma; Aluja, Martin; Zamora-Briseno, Jesus Alejandro; Elizalde-Contreras, Jose M; Bautista-Valle, Mirna V; de Los Santos, Jiovanny Arellano; Sanchez-Martinez, Daniela E; Rivera-Resendiz, Francisco J; Vazquez-Rosas-Landa, Mirna;
 - <https://www.sciencedirect.com/science/article/pii/S0308814621016629>
- 2021 ● **Design of a diagnostic system based on molecular markers derived from the Ascomycetes pan-genome analysis: the case of Fusarium Dieback disease**
- Vazquez-Rosas-Landa, Mirna; Sanchez-Rangel, Diana; Hernandez-Dominguez, Eric E; Perez-Torres, Claudia-Anahi; Lopez-Buenfil, Abel; de Jesus Garcia-avila, Clemente; Carrillo-Hernandez, Edgar-David; Castaneda-Casasola, Cynthia-Cocchet; Rodriguez-Haas, Benjamin; Perez-Lira, Josue;
 - <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0246079>
- 2021 ● **Metagenomic Survey of the Highly Polyphagous Anastrepha ludens Developing in Ancestral and Exotic Hosts Reveals the Lack of a Stable Microbiota in Larvae and the Strong Influence of Metamorphosis on Adult Gut Microbiota**
- Aluja, Martin; Zamora-Briseno, Jesus Alejandro; Perez-Brocal, Vicente; Altuzar-Molina, Alma; Guillen, Larissa; Desgarenes, Damaris; Vazquez-Rosas-Landa, Mirna; Ibarra-Laclette, Enrique; Alonso-Sanchez, Alexandro G; Moya, Andres;
 - <https://www.frontiersin.org/articles/10.3389/fmicb.2021.685937/full>

2020

● **Population genomics of Vibrionaceae isolated from an endangered oasis reveals local adaptation after an environmental perturbation**

- Vazquez-Rosas-Landa, Mirna; Ponce-Soto, Gabriel Yaxal; Aguirre-Liguori, Jonas A; Thakur, Shalabh; Scheinvar, Enrique; Barrera-Redondo, Josue; Ibarra-Laclette, Enrique; Guttman, David S; Eguiarte, Luis E; Souza, Valeria;
- <https://bmcbgenomics.biomedcentral.com/articles/10.1186/s12864-020-06829-y>

2020

● **Evidence for succession and putative metabolic roles of fungi and bacteria in the farming mutualism of the ambrosia beetle *Xyleborus affinis***

- Ibarra-Juarez, Luis Arturo; Burton, MAJ; Biedermann, PHW; Cruz, L; Desgarenes, Damaris; Ibarra-Laclette, Enrique; Latorre, Amparo; Alonso-Sanchez, Alexandro; Villafan, Emanuel; Hanako-Rosas, Greta;
- <https://journals.asm.org/doi/full/10.1128/mSystems.00541-20>

2020

● **A first glimpse of the mexican fruit fly *anastrepha ludens* (Diptera: Tephritidae) antenna morphology and proteome in response to a proteinaceous attractant**

- Ruiz-May, Eliel; Altuzar-Molina, Alma; Elizalde-Contreras, Jose M; Arellano-de Los Santos, Jiovanny; Monribot-Villanueva, Juan; Guillen, Larissa; Vazquez-Rosas-Landa, Mirna; Ibarra-Laclette, Enrique; Ramirez-Vazquez, Monica; Ortega, Rafael;
- <https://www.mdpi.com/1422-0067/21/21/8086>

2019

● **Genomic signals of adaptation towards mutualism and sociality in two ambrosia beetle complexes**

- Blaz, Jazmin; Barrera-Redondo, Josue; Vazquez-Rosas-Landa, Mirna; Canedo-TeXon, Anahi; Aguirre von Wobeser, Eneas; Carrillo, Daniel; Stouthamer, Richard; Eskalen, Akif; Villafan, Emanuel; Alonso-Sanchez, Alexandro;
- <https://www.mdpi.com/2075-1729/9/1/2>

2018

● **How divergent is the Cuatro Ciénegas oasis? Genomic studies of microbial populations and niche differentiation**

- Gomez-Lunar, Zulema; Vazquez-Rosas-Landa, Mirna; Ponce-Soto, Gabriel Yaxal; Moreno-Letelier, Alejandra; Olmedo-alvarez, Gabriela; Eguiarte, Luis E; Souza, Valeria;
- https://link.springer.com/chapter/10.1007/978-3-319-93423-5_5

2018

● **Impact of rearing conditions on the ambrosia beetles microbiome**

- Ibarra-Juarez, Luis Arturo; Desgarenes, Damaris; Vazquez-Rosas-Landa, Mirna; Villafan, Emanuel; Alonso-Sanchez, Alexandro; Ferrera-Rodriguez, Ofelia; Moya, Andres; Carrillo, Daniel; Cruz, Luisa; Carrion, Gloria;
- <https://www.mdpi.com/380452>

2017

● **Comparative genomics of free-living Gammaproteobacteria: pathogenesis-related genes or interaction-related genes?**

- Vazquez-Rosas-Landa, Mirna; Ponce-Soto, Gabriel Yaxal; Eguiarte, Luis E; Souza, V;
- <https://academic.oup.com/femspd/article/75/5/ftx059/3861975?login=true>

2014

● **Two role model of an interaction network of free living proteobacteria from an oligotrophic environment**

- Aguirre_von_Wobeser, Eneas; Soberon_Chavez, Gloria; Eguiarte, Luis E; Ponce_Soto, Gabriel Yaxal; Vazquez_Rosas_Landa, Mirna; Souza, Valeria;
- https://sfamjournals.onlinelibrary.wiley.com/doi/full/10.1111/1462_2920.12305



SOFTWARE

2022

● **rbims**

- An R package to analyze microbial metabolism from metagenome-assembled genomes (MAGs).
- <https://github.com/mirnavazquez/RbiMs>



LEADERSHIP AND SERVICE

2022

● **Member of the board of the CDSB⁹**

📍 Cuernavaca, MX.

- We are a group interested in helping members of Latin American countries acquire the necessary skills to contribute to open source software development.

2021

● **Co-organizer of Rladies Xalapa⁹**

📍 Xalapa, MX.

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2018

- We promote gender diversity in the R community.

2021

● **Abstract reviewer for the conference of women in bioinformatics and data science.**

- <https://wbds.la/conferences/2WBDSLAC/index.html>

I enjoy sharing my knowledge and helping people to grow



MENTORING EXPERIENCE

2019
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2018

- **Manuel Alejandro Ochoa Sanchez**
INECOL 📍 Xalapa, MX.
· MSc student



TEACHING EXPERIENCE - INSTRUCTOR

2021

- **Encuentro de Bioinformatica en Mexico 2021. Flujos de trabajo con RStudio y creacion de Shiny apps**
📍 Virtual event.
· https://comunidadbioinfo.github.io/cdsb2021_workflows/

2019

- **Bioinformatics seminar**
📍 Xalapa, MX.
· INECOL. Graduate program

2019
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2018

- **Bioinformatics tools for the analysis of genomes and transcriptomes**
📍 Xalapa, MX.
· INECOL. Graduate program

2018

- **Bash, Perl and C programming languages for the analysis of biological data.**
📍 Xalapa, MX.
· INECOL. Graduate program

2017

- **III Introductory Workshop to Bioinformatics**
📍 Mexico City, MX.
· Ecology Institute, National Autonomous University of Mexico.

2017
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2014

- **Prokaryotic Biology.**
📍 Mexico City, MX.
· Faculty of Science, National Autonomous University of Mexico. Bachelors program. Semesters 2015-1, 2016-1, 2017-1 and 2018-1

2016

- **II. Introductory Workshop to Bioinformatics: From Alignments to Metagenomics.**
📍 Mexico City, MX.
· Ecology Institute, National Autonomous University of Mexico.

TEACHING EXPERIENCE – ASSISTANT

- 2019
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2018
- **Ethics and Scientific Writing, Arming Proposals Research and Creativity, Innovation and Patent Generation.**
Xalapa, MX.
· INECOL. Graduate program
 - **Study of microbial evolution.**
Mexico City, MX.
· Ecology Institute, National Autonomous University of Mexico. Graduate program. Semester 2017-2.

WORKSHOPS

- 2019
- **Workshop in Advanced Bioinformatics: Comparative Genomics and Evolution Using Data Science.**
Institute of Mathematics and Institute of Neurobiology.
Juriquilla, MX.
 - **How to Build and Create Tidy Tools**
Center for Genomic Sciences
Cuernavaca, MX.
· https://comunidadbioinfo.github.io/post/building_tidy_tools_cdsb-runconf2019/#.XTdh1UNOm94
 - **Latin American R/Bioconductor Developers Workshop**
Center for Genomic Sciences
Cuernavaca, MX.
· https://comunidadbioinfo.github.io/post/r_bioconductor_developers_workshop_2018/#.XTdiA0NOM94
 - **Statistical analysis with R**
IPICYT
San Luis Potosi, MX.
 - **An Anvio workshop in Montreal**
The University of Montreal
Montreal, CA.
· Taught by Dr. Eren Murat of the University of Chicago
 - **Strategies and Techniques for Analyzing Microbial Population Structure**
Marine Biological Laboratory
Woods Hole Oceanographic Institution

CONFERENCES, TALKS, POSTERS AND SCIENTIFIC OUTREACH

- 2021
- **Bioconductor2021**
Virtual event
· Presented the `rbims70` package in which I am working on.

I am constantly learning

- 2021 ● **useR** 📍 Virtual event
- Presented the rbims⁷⁷ package in which I am working on.
- 2021 ● **World Microbial Forum** 📍 Virtual event
- Presented the results of the first metagenomics study that I made, where I show the diversity of bacteria that degrade hydrocarbons. Poster here⁷².
- 2021 ● **MicrobiomeMX** 📍 Virtual event
- I talked about a diagnosis system to identify the pathogen responsible of the Fusarium Dieback disease
- 2020 ● **RladiesMX** 📍 Virtual event
- I showed how to use R in microbiology. Conference here⁷³. Participation on minute 2.42.
- 2019 ● **Plant and Animal Genome conference** 📍 San Diego, USA.
- Poster presentation of the effects of oviposition in Avocado Hass. Abstract here⁷⁴.
- 2019 ● **Not everything that shines is green or bacteria with jellyfish genes** 📍 Xalapa, MX.
- Instructor at the program of Promotion of science and technology of young scientists (Fomento a la ciencia y tecnología de jóvenes científicos in Spanish) with the project: Not everything that shines is green or bacteria with jellyfish genes (No todo lo que brilla es verde o bacterias con genes de medusa) at the Ecology Institute, A.C.
- 2017 ● **VI National Ecological Meeting** 📍 Leon, MX.
- Oral presentation
- 2017 ● **XL National Meeting of Microbiology** 📍 Guadalajara, MX.
- Poster presentation
- 2016 ● **VI Students Symposium** 📍 Mexico City, MX.
Ecology Institute, UNAM
- Oral presentation
- 2015 ● **IV Biochemistry and Molecular Microbial Biology Congress** 📍 Coahuila, MX.
- Poster presentation

- 2015 ● **I st Joint Symposium Evolution and Genomics. Bath University and the Center for Genomic Sciences at UNAM.**
📍 Cuernavaca, MX.
 · Poster presentation
- 2015 ● **Gordon Research Conference on Microbial Population Biology.**
 Proctor Academy 📍 New Hampshire, USA.
 · Poster presentation
- 2013 ● **III Biochemistry and Molecular Microbial Biology Congress**
 · Poster presentation
- 2012 ● **I st Meeting for the conservation of Cuatro Ciénegas, Coahuila**
 Center for Ecosystem Research
 · Poster presentation

LANGUAGES

- Native: Spanish (Mexico)
- Bilingual: English

LINKS

- 1: https://sites.utexas.edu/baker_lab/
- 2: https://www.inecol.mx/personal/index.php/moleculares/139_enrique_ibarra_laclette
- 3: <http://www.ecologia.unam.mx/web/>
- 4: https://www.sciencemag.org/news/2020/07/watch_threatened_pools_mexican_desert_hold_clues_early_life
- 5: <https://comunidadbioinfo.github.io>
- 6: <https://rladies.org>
- 7: https://www.meetup.com/rladies_xalapa/
- 8: <https://comunidadbioinfo.github.io/>
- 9: https://www.meetup.com/rladies_xalapa/
- 10: <https://github.com/mirnavazquez/RbiMs>
- 11: <https://github.com/mirnavazquez/RbiMs>
- 12: <https://twitter.com/MirnaVRL/status/1406971373948440578?s=20>
- 13: <https://www.youtube.com/watch?v=hKut39SpQoY>
- 14: <https://pag.confex.com/pag/xxvii/meetingapp.cgi/Paper/37298>