

Luna L. Sánchez-Reyes

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– CURRICULUM VITAE –

Education

- 2016 **PhD, Biological Sciences**, Graduate Program of Biological Sciences, Universidad Nacional Autónoma de México (UNAM).
Dissertation: “*Evaluación de métodos para la reconstrucción del proceso de diversificación y su relación con la historia macroevolutiva de taxa vivientes* [Evaluation of methods for species diversification process reconstruction and its relationship with the macroevolutionary history of extant taxa]”.
Advisor: Susana A. Magallón Puebla, Department of Botany, Institute of Biology, UNAM.
- 2010 **B.Sc., Biology**, Facultad de Ciencias, UNAM.
GPA: 9.78/10
Dissertation: “*Genómica de poblaciones asociada a los nichos ecológicos de Escherichia coli* [Population genomics associated to the ecological niches of *Escherichia coli*]”.
Advisor: Andrea González-González, Department of Evolutionary Ecology, Institute of Ecology, UNAM.

Expertise and skills

Programming languages: R (advanced), perl (basic), BASH scripting(basic), python (basic).

Markup languages: rmarkdown (advanced), LaTeX (medium), html (basic).

Software: Genome-scale nucleotide alignment (MAUVE, Muscle, Clustal), phylogenetic reconstruction and tree dating (BEAST, PATHd8, r8s, PhyML, treePL, MrBayes, BLADJ), time dependent species diversification analyses (RPANDA, laser, BAMB, TreePar), tree simulation (RPANDA, TreePar, ape).

Subject areas: Bioinformatics, probability, data analysis, comparative analysis, phylogenetics, molecular clock, tree dating, tree simulation, species diversification, population genetics, population genomics, molecular evolution, anchored hybrid enrichment, machine learning, spatial analysis, science communication.

Wet lab: DNA extraction, PCR, gel electrophoresis, bacterial collection

maintenance, DNA and gene expression profiling (micro- and macroarrays).

Professional experience

- 2017-present Postdoctoral researcher at the O'Meara lab working with the Datelife project.
R package development: www.github.com/phylotastic/datelife and rphylotastic
Website development: www.datelife.org
- 2017 Research Assistant, National Program for Support of Research and Technological Innovation Projects (PAPIIT), Mexico.
“*Investigando las causas de la megadiversidad: Factores asociados a la diversificación macroevolutiva de cuatro grupos vegetales mesoamericanos* [Studying the causes of megadiversity: Factors associated to macroevolutionary diversification of four Mesoamerican vegetal groups]”.
Leading Researchers: Susana A. Magallón Puebla, Instituto de Biología, UNAM; Gerardo A. Salazar Chávez, Instituto de Biología, UNAM
- 2016 Professor, Intensive course: Introduction to R for biology. Internal courses of the Department of Botany, Institute of Biology, UNAM.
- 2014 Assistant Professor, Biological Sciences Graduate Program, UNAM.
Course: *Biología Filogenética* [Phylogenetic Biology]. Fall Semester.

Assistant Professor, B.Sc. Biology Program of the Faculty of Sciences, UNAM.
Course: *Sistemática II* [Systematics level II]. Fall Semester.

Research visitor, Institute of Biology of the Ecole Normale Supérieure (ENS) Paris, France. June – July.
Leading Researcher: Hélène Morlon, National Council of Scientific Research (CNRS), France.
- 2013 Research visitor. Center for Applied Mathematics (CMAP), Polytechnique School, Paris-Saclay, France. September – December.
Leading Researcher: Hélène Morlon, CNRS, France.
- 2010-2011 Research assistant, PAPIIT project: *Evaluación de marcadores genéticos para un microarreglo diagnóstico de enfermedades diarreicas en el Pacífico Mexicano utilizando metagenómica* [Evaluation of genetic markers for the development of a microarray for the diagnosis of enteric disease in the Mexican Pacific Ocean using metagenomics].
Leading Researchers:
Valeria Souza, Laboratory of Molecular and Experimental Evolution, Department of Evolutionary Ecology, Institute of Ecology, UNAM, Mexico.
Rosario Morales, Laboratory of Bacterial Genomics, Department of Microbiology and Parasitology, Institute of Medicine, UNAM, Mexico.

- 2009-2010 Research assistant, National Researchers Systems (SNI) Level III Project: *Transferencia horizontal en bacterias entéricas diarréicas y la evolución de la patogénesis* [Horizontal transfer in diarrheagenic enteric bacteria and the evolution of pathogenesis].
Leading Researcher: Luis Enrique Eguiarte Fruns, Laboratory of Molecular and Experimental Evolution, Department of Evolutionary Ecology, Institute of Ecology, UNAM, Mexico.

Peer- reviewed Published work and in Progress

Number of citations: 378

- In prep. **Sánchez-Reyes L.L.**, Brian O'Meara. DateLife: Leveraging databases and analytical tools to reveal the dated Tree of Life.
- In prep. Barba-Montoya J.A., **Sánchez-Reyes L.L.**, Magallón S. Do pollination syndromes influence diversification rates of columnar cacti (core-Pachycereeae, Echinocereae, Cactaceae)?
- 2019 Nguyen, V.D., Nguyen, T.H., Tayeen, A.S.M., Laughinghouse, H.D., **Sánchez-Reyes, L.L.**, Pontelli, E., O'Meara, B., Stoltzfus, A. (2018). Phylotastic: improving access to tree-of-life knowledge with flexible, on-the-fly delivery of trees. bioRxiv, 419143. In review in *Methods in Ecology and Evolution*.
- 2018 Flores-Abreu I., Trejo-Salazar R. E., **Sánchez-Reyes L.L.**, Good S. V., Magallón S., García-Mendoza A., Eguiarte L.E. Tempo and mode in coevolution of *Agave sensu lato* (Agavoideae, Asparagaceae) and its bat pollinators, Glossophaginae (Phyllostomidae). In review in *Molecular Phylogenetics and Evolution*.
- 2018 Magallón, S., **Sánchez-Reyes, L.L.**, & Acevedo, S.G. Thirty clues to the exceptional diversification of flowering plants. bioRxiv, 279620. *Annals of Botany* doi:10.1093/aob/mcy182
- 2018 De-Nova, J.A., **Sánchez-Reyes, L.L.**, Eguiarte, L.E., & Magallón, S. (2018). Recent radiation and dispersal of an ancient lineage: The case of *Fouquieria* (Fouquieriaceae, Ericales) in North American deserts. *Molecular phylogenetics and evolution*, 126, 92-104.
- 2017 Fragoso-Matínez I., Salazar G., Magallón S., **Sánchez-Reyes L.L.**, Sazatornil F., Lemmon A., Lemmon E., Granados C. A pilot study applying the Plant Anchored Hybrid Enrichment method to New World Sages (*Salvia* subgenus Calosphaea; Lamiaceae). *Molecular Phylogenetics and Evolution*.
- 2016 **Sánchez-Reyes L.L.**, Morlon H., Magallón S. Uncovering higher-taxon diversification dynamics from clade age and species-richness data. *Systematic*

Biology, syw088.

- 2015 Magallón, S., Gómez-Acevedo, S., **Sánchez-Reyes, L. L.** & Hernández-Hernández, T. (2015). A metacalibrated time-tree documents the early rise of flowering plant phylogenetic diversity. *New Phytologist*, 207:437-453.
- 2012 González-González, A., **Sánchez-Reyes, L.L.**, Sapien, G.D., Eguiarte, L.E., Souza, V. 2012. Hierarchical clustering of genetic diversity associated to different levels of mutation and recombination in *Escherichia coli*: a study based on Mexican isolates. *Infection, Genetics and Evolution*, 13:187-197.

Other publications

- 2012 **Sánchez-Reyes L.L.**, A. González-González, L.E. Eguiarte, V. Souza. Capítulo 15. *Patogénesis bacteriana: Ecología y evolución* [Bacterial pathogenesis: Ecology and Evolution]. *Cardiología Evolutiva* [Evolutionary Cardiology]. Eds. Sánchez-Torres G., V. Guarner-Lans. Lulu, México, D.F.
- 2011 **Sánchez-Reyes LL.** 2011. *La evolución de los seres vivos* [The evolution of living beings]. Cienciorama. Online publication.
http://www.cienciorama.unam.mx/a/pdf/190_cienciorama.pdf

Invited talks

- 2017 **Sánchez-Reyes L.L.** *Bioinformática de la diversidad: procesos evolutivos desde bacterias hasta plantas con flor* [Diversity bioinformatics: Evolutionary processes from bacteria to flowering plants]. Instituto Potosino de Ciencia y Tecnología [Potosin Institute of Science and Technology] (IPICYT), San Luis Potosí, Mexico, Institutional Seminar, 22 June.
- 2014 **Sánchez Reyes LL**, S. Magallón, H. Morlon. Multiple shifts in diversification and rate of origin of higher clades might explain species richness heterogeneity in flowering plants. Invited speaker, Colloquium “Empirical approaches to phylogenetic comparative methods in plant science”, Botany 2014: New Frontiers in Botany. 26 – 30 July, Boise, Idaho, USA.
- 2013 **Sánchez Reyes L.L.**, S. Magallón, H. Morlon. Reconstruction of the species diversification process and its relationship with the macroevolutionary history of living taxa. Paris-Sud University, France, Seminars, 12 December.

Meetings

- 2019 Evolution Meeting 2019, 22-25 June, Providence, Rhode Island, USA.
- Symposium accepted. Diversification through time, space and lineages: relationships between data quality and good inferences. Organizer.

- Talk contribution. **Sánchez Reyes LL**, B. O'Meara. Leveraging databases and analytical tools to reveal the dated Tree of Life: How much of it can we use to understand the diversification of Life on Earth?

- Poster contribution. **Sánchez Reyes LL**, B. O'Meara. DateLife: Leveraging databases and analytical tools to reveal the dated Tree of Life.
- 2018 Evolution Meeting 2018, 18 – 22 August, Montpellier, France.
Poster contribution accepted. *Could not attend due to visa issues.
Sánchez Reyes LL, B. O'Meara. DateLife: Leveraging databases and analytical tools to reveal the dated Tree of Life.
- 2018 Society of Systematic Biologists standalone meeting 2018, 1 – 4 June, Columbus, Ohio, USA.
Oral contribution. **Sánchez Reyes LL**, B. O'Meara. DateLife: Leveraging databases and analytical tools to reveal the dated Tree of Life.
- 2016 Evolution Meeting 2016, 17 – 21 June, Austin, Texas, USA.
Oral contribution. **Sánchez Reyes LL**, S. Magallón, H. Morlon. Uncovering macroevolutionary diversification dynamics from clade age, species richness and taxonomic structure.
- 2015 Evolution Meeting 2015. 26 – 30 June, Guarujá, Brasil.
Oral contribution. **Sánchez Reyes LL**, S. Magallón, H. Morlon. Taxonomic structure and the primary drivers of macroevolutionary dynamics.
- 2014 Botany 2014: New Frontiers in Botany. 26 – 30 July, Boise, Idaho, USA.
Oral contribution at the Colloquium “Empirical approaches to phylogenetic comparative methods in plant science”: **Sánchez Reyes LL**, S. Magallón, H. Morlon. Multiple shifts in diversification and rate of origin of higher clades might explain species richness heterogeneity in flowering plants.
- 2014 Evolutionary Plant Radiations: Where, When, Why and How? 13 – 14 June, Institute of Systematic Botany, University of Zurich, Switzerland.
Poster contribution. **Sánchez Reyes LL**, S. Magallón, H. Morlon. Models of diversification and the age-richness relationship in Angiosperms: Multiple shifts and rates of origin.
- 2013 Evolution Meeting 2013. 21 – 25 June, Snowbird, Utah, USA.
Oral contribution. **Sánchez Reyes LL**, S. Magallón, H. Morlon. Models of species diversification and the age-richness relationship paradigm.
- 2008 Congreso Mexicano de Ecología: La ecología mexicana en tiempos de cambio global [Mexican Congress of Ecology: Mexican Ecology in Times of Global Change], 16 – 21 November, Mérida, Yucatán, México.
Poster contribution. **Sánchez Reyes LL**, A. González González, L.E. Eguiarte Fruns, V. Souza Saldívar. Genómica de poblaciones asociada a los nichos ecológicos de *Escherichia coli* [Population genomics associated to the ecological niches of *Escherichia coli*].

Awards and Distinctions

- 2017 - 2025 Chair Fellow, National Council of Science and Technology (CONACyT), Mexico. Total of \$4.8M Mexican Pesos (~\$250k USD) Declined for current position.
- 2016 Society of Systematic Biologists (SSB) Ernst Mayr Symposium Award Finalist.
- 2011-2016 Mexican National Scholarship for graduate studies, National Council of Science and Technology (CONACyT) 410511/262540
Total of \$1.56M Mexican Pesos (~\$120k USD)
- 2015 Society of Systematic Biologists (SSB) International Students Travel award \$500 USD
- 2015 Mexican National Program for the Advancement of Patenting and Innovation (PROFOPI) Third Place Awarded as coauthor of the technologic development “*Macroarreglo para detección en muestras ambientales y biológicas de microorganismos enteropatógenos* [Macroarray for enteropathogenic microorganism detection in environmental and biological samples]”, Patent MX/a/2014/003938.
\$40k Mexican Pesos (~\$3k USD)
- 2012 PBDB Workshop 2012: Paleobiology Database Intensive Workshop in Analytical Methods. Department of Biological Sciences, Macquarie University. 25 June – 29 de July. Lodging and travel expenses covered by organizers. Professors: Dr. John Alroy, Macquarie University; Dr. Gene Hunt, Smithsonian; Dr. David Polly, Indiana University; Dr. Peter Wagner, Smithsonian; Dr. Thomas Olszewski, Texas A & M.

Synergistic Activities

- 2017 - present Group Coordinator, Pipeline for Mentoring Women in STEM, University of Tennessee, Knoxville. Coo-coordinator: Charlotte Chang, National Institute for Mathematical and Biological Synthesis (NIMBioS), University of Tennessee, Knoxville
- 2012 - present Reviewer International Journal of Organic Evolution, Evolution; Journal of Biogeography.

Languages

Spanish, native
English, fluent (speaking, reading, writing)
French, fluent (speaking, reading, writing)
Nahuatl, basic (speaking, reading, writing)
Portuguese, basic (speaking)

Japanese, basic (speaking)