VIVIANA ROMERO ALARCON

Computational Biologist I PhD Candidate, Integrative Biosciences

Doctoral researcher at the University of Massachusetts Boston working at the intersection of evolutionary biology, phylogenetic comparative methods, scientific software, and artificial intelligence. My research focuses on improving reproducibility in evolutionary inference and developing computational approaches to understand biodiversity patterns and extinction risk. I design open-source tools and accessible scientific workflows and contribute to interdisciplinary AI-for-science initiatives, including the Paul English Applied AI Institute.



EDUCATION

2023 | Present

University of Massachusetts Boston
PhD in Integrative Biosciences (Bioinformatics / Computational Biology); doctoral candidacy, 2026
Boston, USA

WWF-Fonseca Leadership Program, 2025–2026.

2020

Universidad Industrial de Santander
M.Sc. in Biology — Bucaramanga, Colombia

Thesis: Ancestral area for the major clades in Testudines (Pan-Testudines:Testudinata): An approach by temporal and geographic ranges.

2016

Universidad Industrial de Santander
Undergraduate degree in Biology — Bucaramanga, Colombia

Thesis: Panbiogeographic pattern of Choco region.

RESEARCH AND SCIENTIFIC SOFTWARE

2023 | Present

Reproducibility and AI-assisted study design in phylogenetic comparative biology
Doctoral research thesis: phyloSophR — Boston, USA
Investigating transparent, reproducible comparative analyses and human-in-the-loop AI support for hypothesis formulation, study design, and analytical decision-making. Includes the PhyloSophR research initiative. In development.

2021 | Present

GUANE: phylogenetic comparative biology web platform
Doctoral research thesis: Scientific software project (R / Shiny)
Boston, USA
Developing accessible interfaces for teaching, learning, and conducting phylogenetic comparative analyses, with an emphasis on transparent workflows and reusable code. In development.

CONTACT INFO

alarconvv.github.io

linkedin.com/in/alarconvv

github.com/alarconvv

vivianaromeroalarcon@umb.edu

SKILLS

Programming: R, Python, Bash; Shiny, Quarto, Git/GitHub.
Evolutionary methods: phylogenetic comparative methods, ancestral state reconstruction, statistical modeling, biogeography.
AI and data science: machine learning, graph neural networks, biodiversity informatics.
Research practice: reproducible computational workflows, simulation, scientific software and visualization.
Languages: Spanish and English.

2023 | Present

Predictive modeling of bird extinction risk

Doctoral research thesis: Modeling extinction Risk. Boston, USA

Studying how biological traits, geography, and environmental conditions relate to extinction risk, including global analyses and the northern Andes as a regional focus. In development.

2026 | Present

Ofey: an embodied scientific discussion assistant

Research prototype concept Boston, USA

Prototyping a configurable desk-based scientific assistant to help researchers articulate hypotheses, evaluate alternatives, and consider study design choices; prototype domain is phylogenetic comparative biology. In development.

RESEARCH EXPERIENCE

2021 | 2023

Research Assistant

Universidad de la Santísima Concepción Concepcion, Chile

Project:A flexible web platform for learning, teaching, and analysis in phylogenetic comparative biology

Fondecyt Leader: Dr. Liam Revell

2021

Research Assistant

Universidad del Rosario Bogota, Colombia

Project: New Turtles and Fossil Snakes from the Miocene at the Tatacoa Desert, Huila - Colombia: Phylogenetic, histological and paleobiogeographic implications - Colciencias

Leader: Dr. Edwin Cadena

PROFESSIONAL EXPERIENCE

2021

Professional Biologist

Monitoreos Ambientales Maht Ltda Bogota, Colombia

INVIMA certification implementation project for production and Health Notification for antibacterial sanitizing products

TEACHING EXPERIENCE

2026

Biology Laboratory Teaching (BIO 112)

University of Massachusetts Boston Boston, USA

Biology laboratory instruction and assessment, including scientific evidence, comparative anatomy, quantitative exercises, and data interpretation.

2018 | 2021

Statistics for Biologists

Lecturer at Universidad Industrial de Santander Bucaramanga, Colombia

- Taught R language to beginners.
- Statistical analysis and experimental design

2018 | 2021

Systematics
Lecturer at Universidad Industrial de Santander
Bucaramanga, Colombia

- Phylogenetic reconstruction
- Comparative methods
- Parsimony, Maximum Likelihood and Bayesian analysis
- Biogeography

2019

Biology
High School Teacher at Colegio de la Presentacion
Bucaramanga, Colombia

- Classes preparation in biology
- Projects organization for last-year students

MENTORING

2019

Co-supervisor
Universidad Industrial de Santander — Bucaramanga, Colombia
Thesis: “Páramo como área biogeográfica”

Student: Carlos Javier Díaz (name spelling to confirm)

2018

Tutor
Universidad Industrial de Santander — Bucaramanga, Colombia
Thesis: “Clave interactiva (DELTA) para los géneros de Anura de Santander-Colombia”

Student: Silvia Florez

ORGANIZER AND CHAIR

2026

Co-organizer, 3rd AI Symposium
Boston-area academic AI community — Boston, USA
Scientific event coordination and interdisciplinary research communication (event date and organizing institution to confirm).

2021

Organizer committee
Primer Congreso Latinoamericano de Evolución (CLEVOL)
Santiago, Chile (Online)
Herramientas Computacionales en Análisis Evolutivo

Co-organizer: Liam Revell

2019

Workshop Instructor
Universidad Industrial de Santander — Bucaramanga, Colombia
GBIF and cleaning electronic databases using R

2017

Workshop Teaching Assistant
Universidad del Valle — Cali, Colombia
Introduction to phylogenetic methods in R

Instructor: Liam Revell

2017

Organizer committee
Universidad Industrial de Santander — Bucaramanga, Colombia
The Owen, Darwin and Wallace day

VOLUNTEERING

2008 | 2016

Natural History Museum - herpetology collection
Universidad Industrial de Santander — Bucaramanga, Colombia
Curator: Martha P. Ramirez-Pinilla

- Recording and cataloging
- Preparing specimens
- Taxonomic identification

2017

Transcription Center - Pollen Collection
Smithsonian Tropical research Institute — Bucaramanga, Colombia

- Online
- Label transcription
- Second and third Checking

2010

Yare II project
PROAVES - Natural History Museum of London
Bucaramanga, Colombia
Leader: Blanca Huertas

- Fieldwork in “Serrania Yariguies”
- Collecting herpetological fauna
- Preparing specimens
- Taxonomic identification

FELLOWSHIPS AND RESEARCH SUPPORT

2025 | 2026

WWF-Fonseca Leadership Program
WWF Education for Nature Program
Research leadership support related to biodiversity conservation and computational approaches to extinction risk (award terms to confirm).

2024

AI+Science Summer School Travel Support
University of Chicago Data Science Institute and IMSI — Chicago, USA
Fee waiver and travel stipend for AI+Science Summer School.

AWARDS

2017

1st Place: Poster.
VI Simposio Colombiano de Biología evolutiva — Cali, Colombia
Title: Selecting priors in Bayesian Inference: An example with the superfamily Testudinoidea (Testudines: Cryptodira)

2016 **2nd Place: Poster.**
Simposio Nacional de Evolución, Ecología y Medio Ambiente
Tunja, Colombia
Title: Phylogenetic relationships of the genus Rhinoclemmys (Testudines: Testudinoidea): When genes tell different stories

2015 **1st Place: Presentation.**
X Congreso Latinoamericano de Herpetología. Tunja, Colombia
Title: Primary homology hypothesis of Chocó Biogeographic: An approach from amphibians

PUBLICATIONS

2026 **Unlocking a flexible set of phylogenetic models for discrete and continuous trait evolution using discretized stochastic diffusion**
bioRxiv preprint
Revell, L. J., Alencar, L. R. V., Alfaro, M. E., Dain, J., Hill, N. J., Jones, M., Martinet, K. M., **Romero-Alarcon, V.**, & Harmon, L. J.

https://doi.org/10.64898/2026.04.20.719455

2023 **The importance of the Andes in the evolutionary radiation of Sigmodontinae (Rodentia, Cricetidae), the most diverse group of mammals in the Neotropics.**
Scientific Reports 13, 2207
Paulo Vallejos-Garrido, Kateryn Pino, Nicolás Espinoza-Aravena, Alexander Pari, Oscar Inostroza-Michael, Macarena Toledo-Muñoz, Boris Castillo-Ravanal, **Viviana Romero-Alarcon**, Cristián E. Hernández, R. Eduardo Palma & Enrique Rodríguez-Serrano

https://doi.org/10.1038/s41598-023-28497-0

2020 **Neotropical páramos as biogeographic units**
Revista De Biología Tropical 68(2), 503–516.
Diaz Acevedo, C. J., **Romero-Alarcon, L. V.**, & Miranda-Esquivel, D. R.

https://doi.org/10.15517/rbt.v68i2.39347

2016 **biogeoclean**
https://github.com/alarconvv/biogeoclean
Romero-Alarcon, L. V., & Miranda-Esquivel, D. R.

2013 **YARÉ II PROJECT: Serranía de los Yariguíes Assessment and Research of Endangered Species, Santander, Colombia.**
Final Report - 2013 Conservation Leadership Programme Follow-Up Award
José Aguilar, **Viviana Romero**, John Arias, Yulied Bautista, Thomas Donegan, Blanca Huertas, Juan Carlos Luna, José Pinto and Diana Villanueva https://www.conservationleadershipprogramme.org/media/2014/12/F0611710_Colombia_Final-Report_YARE-II.pdf

2015 **Desarrollos computacionales**
Boletín Colombiano de Biología Evolutiva COLEVOL. v.3 ISSN: 2500-6762 https://issuu.com/boletincolevol/docs/boletincolevol_2015_1/14

2016 **Desarrollos computacionales**
Boletín Colombiano de Biología Evolutiva COLEVOL. v.4 ISSN: 2500-6762 https://issuu.com/boletincolevol/docs/boletincolevol_2016_1

2017 **Desarrollos computacionales**
Boletín Colombiano de Biología Evolutiva COLEVOL. v.5 ISSN: 2500-6762 https://issuu.com/boletincolevol/docs/boletincolevol_2017-1

2018 **Desarrollos computacionales**
Boletín Colombiano de Biología Evolutiva COLEVOL. v.6 ISSN: 2500-6762 https://issuu.com/boletincolevol/docs/boletincolevol_2018-1

2019 **Desarrollos computacionales**
Boletín Colombiano de Biología Evolutiva COLEVOL. v.7 ISSN: 2500-6762 https://issuu.com/boletincolevol/docs/boletincolevol_2019_1

ACADEMIC EVENTS

2024 **Evolution meeting. Society for the Study of Evolution (SSE).**
Poster: Viviana Romero-Alarcon; Liam Revell Montreal, Canada
Title: "Reproducibility, Replicability and Transparency in Phylogenetic Comparative Biology"

2023 **Evolution meeting. Society for the Study of Evolution (SSE).**
Poster: Viviana Romero-Alarcon; Liam Revell Albuquerque, USA
Title: Guane: a shiny platform for comparative phylogenetic methods"

2022 **Evolution meeting. Society for the Study of Evolution (SSE).**
Poster: Viviana Romero-Alarcon; Liam Revell Cleveland, USA
Title: Guane: A flexible web platform for learning, teaching, and analysis in phylogenetic comparative biology

2022 **LXV Reunion anual Sociedad de Biología de Chile**
Talk: Viviana Romero-Alarcon; Liam Revell Pucon, Chile
Title: Guane: A flexible web platform for learning, teaching, and analysis in phylogenetic comparative biology - Phase I

2019 **V Congreso Colombiano de Zoología**
Poster: Yovanny Duran Barajas, L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel
Bogota, Colombia
Title: Hipótesis del origen de Leishmania

Asoc. Col. Zoo. pp 16. ISSN 2665-2994 Colombia. 2019. http://vccz.aczcolombia.org/wpcontent/uploads/2019/02/resumenes.pdf

2019

V Congreso Colombiano de Zoología
Poster: Carlos Díaz Acevedo, L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel

Bogota, Colombia

Title: Páramos Neotropicales como áreas biogeográficas

Asoc. Col. Zoo. pp 133. ISSN 2665-2994 Colombia. 2019. http://vccz.aczcolombia.org/wpcontent/uploads/2019/02/resumenes.pdf

2017

I Congreso Latinoamericano de Biogeografía. Universidad de IKIAM
Talk: L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel

Quito, Ecuador

Title: Patrón de diversificación y estatus de conservación de tortugas neotropicales

2017

VI Simposio Colombiano de Biología Evolutiva. Universidad del Valle
Poster: L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel

Cali, Colombia

Title: Selecting priors on Bayesian Inference: An example with the Testudinoidea (Testudines: Cryptodira) superfamily

Aso. Col. Biol. Evol. pp 55. ISSN 2500-6762 Colombia. 2017. https://issuu.com/boletincolevol/docs/libroresumenescolevol_cali2017

2017

XL Congreso Latinoamericano de Herpetología. Pontificia Universidad Católica del Ecuador
Poster: Alejandra Ruiz, L. Viviana R-Alarcon, Daniel R. Miranda Esquivel

Quito, Ecuador

Title: Más no es mejor. Genes con muestreo incompleto no suma a la resolución de las relaciones del grupo lacrimosus (Pristimantis: Craugastoridae).

2016

I Congreso Colombiano de Herpetología
Poster: L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel

Medellin, Colombia

Title: Consistencia estadística de pesos implícitos bajo un modelo simple de transformación de estados de caracter.

Aso. Col. Herp. pp 41. ISSN 2590-6984 Colombia. 2016. http://www.acherpetologia.org/wpcontent/uploads/2017/10/Libro_Resumenes_1CCH-2016.pdf

2015

XX Congreso Colombiano de Ciencias Biológicas. Universidad Industrial de Santander
Talk: Karen Mendez-Camacho, L. Viviana R-Alarcon, Viviana Ayus, Daniel R. Miranda-Esquivel

Bucaramanga, Colombia

Title:Diversificación de la biota amazónica: Ríos como barreras vicariantes

http://www.asociacioncolombianadecienciasbiologicas.org/wpcontent/uploads/2017/12/50-Memorias-L-ACCB2015.pdf

2015

Simposio Nacional de Ecología, Evolución y Medio Ambiente. Universidad Pedagógica y Tecnológica de Colombia

Talk: L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel

Tunja, Colombia

Title:Relaciones filogenéticas del género Rhinoclemmys (Testudines: Testudinoidea): Cuando los genes cuentan diferentes historias

http://www.asociacioncolombianadecienciasbiologicas.org/wpcontent/uploads/2017/12/50-Memorias-L-ACCB2015.pdf

2015

Fourth Meeting of the Network for Neotropical Biogeography (NNB4)

Talk: L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel

Ciudad de Panama, Panama

Title:GeoCAMT: A package in R to cleaning geographical data

2015

X Congreso Latinoamericano de Herpetología. Asociación Colombiana de Zoología

Poster: L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel

Cartagena, Colombia

Title:Tortugas continentales como modelo para evaluar el cierre del Istmo de Panamá

Asoc. Col. Zoo. Pp 533. ISSN 2422-5134. Colombia. 2015. http://ivccz.aczcolombia.org/docs/IVCCZ_Libro%20res%C3%BAmenes%20ISSN.pdf

2015

X Congreso Latinoamericano de Herpetología. Asociación Colombiana de Zoología

Video-Presentation: L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel

Cartagena, Colombia

Title:Hipótesis primaria de homología del Chocó biogeográfico: Una aproximación desde anfibios

Asoc. Col. Zoo. pp 555. ISSN 2422-5134. Colombia. 2015. http://ivccz.aczcolombia.org/docs/IVCCZ_Libro%20res%C3%BAmenes%20ISSN.pdf

2014

Third Meeting of the Network for Neotropical Biogeography (NNB3)

Poster: L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel

Bogota, Colombia

Title: Is Choco a biogeographic area? An approach from the optimality criterion

2012

Reunion de ecologia y evolucion del Bororiente colombiano. Universidad de Pamplona

Talk: L. Viviana R-Alarcon, Martha P. Ramírez Pinilla

Bogota, Colombia

Title: Fauna herpetológica de Santander

2011 **XLVII Congreso Colombiano de Ciencias Biológicas. Universidad ICESI**
Poster: L. Viviana R-Alarcon, Daniel R. Miranda-Esquivel
Cali, Colombia
Title:Proyecto YARE II: Lista preliminar de herpetofauna de la Serrania de los Yariguies (Santander-Colombia).

TRAINING AND COURSES

2025 **EMBO Practical Course: Computational Molecular Evolution**
Workshop 100 hrs — Greece (location to confirm)

2024 **2024 AI+Science Summer School**
Workshop 30 hrs — Chicago, USA
Grant: fee waiver and travel stipend: University of Chicago Data Science Institute (DSI) - AI+ Science Research Initiatives; Institute for Mathematical and Statistical Innovation (IMSI)

2019 **Introducción a Data Science: Programación Estadística en R**
Course 30 hrs — Online
Coursera – Universidad Autónoma de México

2019 **Phylogeny DevelopeR Workshop**
Workshop 30 hrs — Nantucket, USA
Grant: University of Massachusetts Boston. Conference fee waiver and travel.

2019 **Applied Phylogenetics**
Workshop 55 hrs — Bodega Bay, USA
Grant: fee waiver University of California – Davis; travel stipend. Science Department. Universidad Industrial de Santander.

2018 **Mediación para la enseñanza y el aprendizaje universitario**
Training 64 hrs — Bucaramanga, Colombia
Universidad Industrial de Santander

2018 **Revbayes Workshop**
Workshop 24 hrs — Buenos Aires, Argentina
Grant: fee waiver Museo Argentino de Ciencias Naturales; travel stipend. Science Department. Universidad Industrial de Santander.

2017 **Biogeografía histórica teórica y Práctica computacional**
Classes 120 hrs — Sao Paulo, Brazil
Grant: fee waiver Universidade do Sao Paulo

2016 **Anatomía craneal de mamíferos: una vista comparada del árbol de amniotas**
Workshop 24 hrs — Tunja, Colombia
Grant: fee waiver Universidad Pedagógica y Tecnológica de Colombia

2016 **Intensive short course on phylogenetic comparative methods in R**
Workshop 30 hrs — San Juan, Puerto Rico
Grant: fee waiver and travel stipend university of Massachusetts - Boston

2015 **IV Curso latinoamericano de evolución y genética**
Workshop 48 hrs — Quindio, Colombia
Grant: fee waiver and travel stipend Red latinoamericana de biología evolutiva - Universidad del Quindío

2013 **Herramientas informáticas para colecciones biológicas**
Workshop 40 hrs — Bogota, Colombia
Grant: fee waiver and travel stipend Instituto Alexander von Humboldt Quindío

2012 **II Curso internacional de biología de la conservación - Sede Andes Peruanos**
Workshop 90 hrs — Machu Picchu, Peru
Grant: fee waiver and travel stipend Universidad Autónoma de México

2012 **Historia natural y conservación de tortugas continentales de Colombia**
Workshop 108 hrs — Isla Palma, Colombia
Grant: fee waiver and travel stipend Universidad del Valle

This academic CV was made with the R package pagedown.

Last updated on 2026-11-02.