

IGNACIO QUINTERO MÄCHLER, PH.D.

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École Normale Supérieure, 46 Rue d'Ulm, 75005 Paris

Evolution • Stochastic processes • Diversification • Phylogenetics • Bayesian Inference

EDUCATION AND PROFESSIONAL EXPERIENCE

2023 - Present

Research Scientist CNRS (CR), Institut de Biologie de l'École Normale Supérieure (IBENS), École Normale Supérieure, Paris, France.

2020 - 2022

Marie Skłodowska-Curie postdoctoral fellow, Institut de Biologie de l'École Normale Supérieure (IBENS), École Normale Supérieure, Paris, France.

Lab: Dr. Hélène Morlon [Lab web-page](#)

2019 - 2020 & 2022 - 2023

CNRS postdoctoral fellow, Institut de Biologie de l'École Normale Supérieure (IBENS), École Normale Supérieure, Paris, France.

Lab: Dr. Hélène Morlon [Lab web-page](#)

2017 - 2018

Statistics Consultant, Yale University Library, Yale University, New Haven, CT, USA.

2013 - 2019

Ph.D., Department of Ecology and Evolutionary Biology, Yale University, New Haven, CT, USA.

Advisor: Dr. Walter Jetz [Lab web-page](#)

Committee: Dr. Forrest W. Crawford, Dr. Michael Donoghue, Dr. Robert E. Ricklefs

2013 - 2016

M.S., Department of Ecology and Evolutionary Biology, Yale University, New Haven, CT, USA.

Advisor: Dr. Walter Jetz [Lab web-page](#)

2012

Internship fellowship, Smithsonian Tropical Research Institute, Barro Colorado Island/Gamboia, Panamá
Linking chemical, physical, and symbiotic traits to understand seed defense syndromes

PIs: James Dalling, A. Elizabeth Arnold and Adam Davis, Post-doc: P. Camilo Zalamea [Project web-page](#)

2011

Visiting Researcher, Department of Ecology and Evolution at Stony Brook University, Stony Brook, NY, USA

Lab: John J. Wiens [Lab web-page](#)

2007 - 2011

B.Sc. Biology, Universidad de los Andes, Bogotá, Colombia.

Thesis Advisor: Dr. Carlos D. Cadena [Lab web-page](#)

PEER-REVIEWED PUBLICATIONS

Quintero, I., Andréoletti, J., Silvestro, D., Morlon, H. (2025) Loss of macroevolutionary species fitness explains the rise and fall of clades. *Nature Ecology & Evolution* | [link](#)

Quintero, I. (2025) The diffused evolutionary dynamics of morphological novelty. *Proceedings of the National Academy of Sciences* 122 (18) e2425573122 | [link](#)

Quintero, I., Lartillot, N., Morlon, H. (2024) Imbalanced speciation pulses sustain the radiation of mammals. *Science* 384: 1007-1012 | [link](#)

- CNRS Biology Communication ([link](#))
- Actualités École Normale Supérieure ([link](#))

Morlon, H., Andréoletti, J., Barido-Sottani, J., Lambert, S., Perez-Lamarque, B., **Quintero, I.**, Senderov, V., Veron, P. (2024). Phylogenetic Insights into Diversification. *Annual Review of Ecology, Evolution, and Systematics* 55 | [link](#)

Quintero, I., Landis, M.J., Jetz, W., Morlon, H. (2023) The build-up of the present-day tropical diversity in tetrapods. *Proceedings of the National Academy of Sciences* 120 (20): e2220672120 | [link](#)

Guarnizo, C. E., Montoya, P., **Quintero, I.**, Cadena, C. D. (2022) Population divergence associated with spatial asynchrony in precipitation in Neotropical frogs. *Journal of Biogeography*, 49: 2169–2180 | [link](#)

Quintero, I., Suchard, M. A., Jetz, W. (2022) Macroevolutionary dynamics of climatic niche space. *Proceedings of the Royal Society B*, 289: 20220091 | [link](#)

Landis, M. J., **Quintero, I.**, Muñoz, M. M., Zapata, F., Donoghue, M. J. (2022) Phylogenetic inference of where species spread or split across barriers. *Proceedings of the National Academy of Sciences*, 119 (13): e2116948119 | [link](#)

Medina, I., Perez, D., Silva, A., Cally, J., Leon, C., Maliet, O., **Quintero, I.** (2022) Nest architecture is linked with ecological success in songbirds. *Ecology Letters*, 25 (6): 1365-1375 | [link](#)

- Media Coverage: The New York Times ([link](#))

Jarzyna, M., **Quintero, I.**, Jetz, W. (2021) Global functional and phylogenetic structure of avian assemblages across elevation and latitude. *Ecology letters*, 24: 196-207 | [link](#)

Quintero, I., Landis, M. J. (2020) Interdependent trait and biogeographic evolution driven by biotic interactions. *Systematic Biology*, 69 (4): 739-755 | [link](#)

Quintero, I., Jetz, W. (2018) Global elevational diversity and diversification of birds. *Nature*, 555: 246-250. | [link](#)

- Nature Research Highlight ([link](#))
- News and Views ([link](#))
- Youtube interview for “Ciencia Café Pa’ Sumercé” in Spanish with English subtitles ([link](#))
- Select Media Coverage: Yale News ([link](#)), Nature Middle East ([link](#)), Phys.org ([link](#)), Yale Daily News ([link](#))

Quintero, I., Keil, P., Jetz, W., Crawford, F. W (2015) Historical Biogeography Using Species Geographical Ranges. *Systematic Biology*, 64 (6): 1059-1073. | [link](#)

Quintero, I., González-Caro, S., Zalamea, P.C., Cadena, C.D. (2014) Asynchrony of seasons: genetic differentiation associated with geographic variation in climatic seasonality and reproductive phenology. *The American Naturalist*, 184 (3): 352-363. | [link](#)

Quintero, I., Wiens, J.J. (2013) Rates of projected climate change dramatically exceed past rates of climatic niche evolution among vertebrate species. *Ecology Letters* 16 (8), 1095-1103. | [link](#)

- Research Highlight in Nature Climate Change [link](#)
- Select Media Coverage: RollingStone ([link](#)), The Guardian ([link](#)), Nature News, Science News ([link](#)), Discovery News ([link](#)), ScienceDaily ([link](#)), Huffington Post ([link](#)), Weather Underground ([link](#)), The Molecular Ecologist ([link](#)), among more than 100 other blog posts.

Quintero, I., Wiens, J.J. (2013) What determines the climatic niche width of species? The role of spatial and temporal climatic variation in three vertebrate clades. *Global Ecology and Biogeography*, 22 (4): 422-432. | [link](#)

Quintero, I., Jácome, A. (2011) Black Hawk-Eagle (*Spizaetus tyrannus*), Neotropical Birds Online, Cornell Lab of Ornithology. | [Web-page](#)

IN REVIEW, PREPRINTS

Andréoletti, J., **Quintero, I.**, Morlon, H. (*in review in Systematic Biology*) The Occurrence Birth-Death Diffusion Process: Unraveling Diversification Histories with Fossils and Heterogeneous Rates | [bioRxiv link](#)

Sanchez, A., **Quintero, I.**, Pedraza, S., Bonilla, D., Lohmann, L. G., Cadena, C. D., Zapata, F. (*in review in Ecology Letters*) Caldas meets Janzen: Thermal regimes of montane plants and implications for global patterns of speciation | [bioRxiv link](#)

SOFTWARE

Quintero, I. Tapestry.jl Julia package v0.4.5 | [Github link](#)

Quintero, I. Introduction to Julia. | [Github link](#)

Quintero, I., Keil, P., Crawford, F. W. (2015) *rasc*: Range Ancestral State Estimation for Phylogeography and Comparative Analyses. R package version 0.3-2. | [Github link](#) | [CRAN link](#)

GRANTS, AWARDS & ACADEMIC DISTINCTIONS

2023 Awardee of Tremplin-ERC StG from the Agence Nationale de Recherche (ANR) grant for “The evolutionary tapestry: total-evidence interdependent models of species evolution” project [€113,500].

2020 Awardee of The Australia and Pacific Science Foundation grant for “Are open nests a key evolutionary innovation in birds?” project with Iliana Medina [AUD 29,878].

2020 Awardee of the Marie Skłodowska-Curie Action (MSCA-IF-2019) for the “INSANE Joint Species And Niche Evolution” project [€184,707.84].

2019 Awardee of Yale’s John Spangler Nicolas prize for the best PhD Dissertation by an Ecology and Evolutionary Biology student [US \$500].

2019 Phylogenetic analysis of diversification across the tree of Life (PANDA). European Research Council (ERC 616419), Consolidator Grant awarded to Hélène Morlon. **Participation as postdoctoral researcher** [€1,857,856].

2019 VertLife Terrestrial: A complete, global assembly of phylogenetic, trait, spatial and environment characteristics for a model clade. Standard Grant from the National Science Foundation (NSF) (DEB 1441737) awarded to Walter Jetz. **Participation as PhD student** [US \$1,130,504].

2018 Advancing Map of Life’s Impact and Capacity for Sharing, Integrating, and Using Global Spatial Biodiversity Knowledge. Continuing Grant from the National Science Foundation (NSF) (DBI 1262600) awarded to Walter Jetz. **Participation as PhD student** [US \$997,627].

2014 Awardee of the Graduate Research Fellowship Program (GRFP) from the National Science Foundation (NSF) for “The Evolutionary Tapestry: Insights on the Processes Behind the Origin and Maintenance of Biodiversity” [US \$138,000].

2014 Validating and Advancing Continent-Wide Projections of Species’ Geographic Distributions in the Face of Global Change. Standard Grant from the National Science Foundation (NSF) (DEB 1026764) awarded to Walter Jetz. **Participation as PhD student** [US \$997,627].

2014 Awardee of the Graduate Student Research Award from the Society of Systematic Biologists (SSB) [US \$2,000].

- 2012 Linking chemical, physical, and symbiotic traits to understand seed defense syndromes. Standard Grant from the National Science Foundation (NSF) awarded to James Dalling, A. Elizabeth Arnold and Adam Davis. **Participation as intern.**
- 2010 **4th absolute place** in Biological Sciences of 2010 nationally in Colombia's Graduate State Exam (Examen de Estado de calidad de la Educación Superior SABER PRO (antes ECAES), Colombia).
- 2007 **Rated in the 1st group nationally** at Colombia's State Exam (Examen de Estado Para Ingreso a la Educación Superior, ICFES, Colombia).

SKILLS

Software: Julia, R, Git, bash, L^AT_EX, Stan, JAGS, GDAL, GEOS,

Languages: Spanish - native, English - fluent, French - C1

INVITED TALKS & ACADEMIC MEETINGS

- 2025 **Invited lecturer at Spherical cows and bipedal goats: perspectives on mathematical models in biology**
Quintero, I. Environmental controls on evolutionary dynamics using interdependent models.
 École Normale Supérieure, Paris, France
- 2025 **Invited lecturer at the Chaire of the Mathematical Modelling and Biodiversity (MMB)**
Quintero, I. Imbalanced diversification sustain the rise, decline and fall of clades.
 Collège de France, Paris, France
- 2025 **Invited lecturer at the Seminar Series**
Quintero, I. The rise, decline and fall of biodiversity.
 Centre de Recherches en Paléontologie (CR2P), Muséum National d'Histoire Naturelle, Paris, France
- 2025 **Congress of the European Society for Evolutionary Biology (ESEB)**
Quintero, I. The rise, decline and fall of biodiversity.
Quintero, I. The diffused evolutionary dynamics of morphological novelty.
 Barcelona, Spain
- 2025 **Invited lecturer by the PhDs and Postdocs at CMEC**
Quintero, I. The rise, decline and fall of biodiversity.
 Center for Macroecology, Evolution, and Climate (CMEC), University of Copenhagen, Denmark
- 2025 **Invited lecturer at the BioGeoPhylo Workshop**
Quintero, I. On the effects of regional environment and modes of diversification.
 CEREGE institute (UMR7330) of Aix-Marseille University, Luma Arles, Arles, France
- 2025 **Invited lecturer at the Seminar Series**
Quintero, I. The rise, decline and fall of biodiversity.
 Department of Computational Biology, University of Lausanne, Switzerland
- 2024 **Invited lecturer at the Seminar Series**
Quintero, I. The rise, decline and fall of clades.
 Department of Biosciences, Durham University, UK
- 2024 **Invited lecturer at the Institute Seminar**
Quintero, I. Imbalanced speciation pulses sustain the radiation of mammals.
 L'Institut Diversité, Écologie et Évolution du Vivant (IDEEV), Université Paris-Saclay, Gif-sur-Yvette, France

- 2023 Speciation Gordon Research Seminar and Conference**
Quintero, I. The birth-death diffusion leading to present-day Mammal diversity.
 Renaissance Tuscany Il Ciocco in Lucca (Barga), Lucca, Italy
- 2022 Invited lecturer at the Ecology Seminar Series**
Quintero, I. Insights into the Processes Behind the Origin and Maintenance of Biodiversity.
 Department of Ecology and Evolution, Texas A&M University-Corpus Christi, TX, USA
- 2021 MCEB: Mathematical and Computational Evolutionary Biology**
Quintero, I., Morlon, H. Incorporating latent stochasticity into environmental, state dependent and general birth-death models.
 Porquerolles, France.
- 2020 Guest lecturer at Sebastian Höhna's lab seminar**
Quintero, I., Morlon, H., Landis, M.J. Interdependent trait evolution with diversification and with biogeography.
 Ludwig-Maximilians-Universität, Munich, Germany (Virtual given the covid-19 pandemic).
- 2019 AEEB : Evolutionary Biology Meeting at Marseille**
Quintero, I., Morlon, H. Effect of fluctuating environment on spatial diversification.
 Marseille, France.
- 2019 Invited lecturer at the seminar series on Biodiversity**
Quintero, I. Insights on the processes behind the origin and maintenance of Biodiversity.
 Swiss Federal Research Institute, WLS, Birmensdorf, Switzerland
- 2019 International Society of Biogeography Biannual Meeting**
Quintero, I., Landis, M.J. Interdependent trait and biogeographic evolution driven by biotic interactions.
 Málaga, España
- 2016 Evolution 2016 (Oral Presentation):**
Quintero, I., Jetz, W. Global altitudinal biodiversity of birds.
 Austin, TX, USA
- 2014 99th Ecological Society of America Annual Meeting (Oral Presentation):**
Quintero, I., Jetz, W. Identifying the evolutionary and geographical underpinnings of global avian mountain biodiversity.
 Sacramento, CA, USA
- 2013 Phylotastic Hackathon #2 (Participant)**
www.phylotastic.org
 Tucson, AZ, USA
- 2013 International Society of Biogeography Biannual Meeting, (Poster):**
Quintero, I., Jetz, W. Variation in avian diversification rate, species richness and elevation across mountain systems.
 Miami, FL, USA
- 2012 Smithsonian Tropical Research Institute BCI Talk (Oral Presentation):**
Quintero, I., González-Caro, S., Zalamea, P.C., Cadena, C.D. Asynchrony of Seasons: population differentiation resulting from spatial heterogeneity in climatic regimes?
 BCI Island, Panamá
- 2011 III Symposium of Evolutionary Biology (Oral Presentation):**
Quintero, I., González-Caro, S., Zalamea, P.C., Cadena, C.D. Asynchrony of Seasons: Population Differentiation Resulting From Geographic Variation in Climate and Avian Reproductive Phenology?
 Medellín, Colombia

SUPERVISION

- 2026 Master student Hugo Girault, Master 1 student de Master B2E - Parcours Darwin à Université de Montpellier, on simulation and empirical comparison of heterogenous birth-death models.
- 2026 Thesis director of doctoral student Paul Leroux, École Normale Supérieure, on the build-up of biodiversity gradients from spatial diversification dynamics (co-supervised by H  l  ne Morlon).
- 2025 PhD defense jury for Sami Touafchia, Museum National d’Histoire Naturel de Paris.
- 2025 Master student Niya Ren, Master 1 student de Biologie Informatique    Universit   Paris Cit  , on developing data-augmented algorithms for multi-type birth-death models.
- 2024 PostDoc Olivia Price, PhD., recruited as part of the T-ERC ANR grant ‘Tapestree’.
- 2020 Master student J  r  my Andr  oletti, Master student at the   cole Normale Sup  rieure, Masters IMAliS at the ENS and Mathematics for Life Sciences at the Universit   Paris-Saclay, on incorporating fossil information in birth-death diffusion.
- 2021 Master student Thomas Merrien, M2-BEE of the Universit   Paris-Saclay, Sorbonne Universit  , the Museum National d’Histoire Naturel de Paris and AgroParisTech, on expanding data augmentation methods to multivariate trait evolution.
- 2019 Master student Clio Dalmaz, Master en Sciences de la Vie au Centre de Recherches Interdisciplinaires (CRI), on using GIS tools and clustering algorithms to biologically define biomes.
- 2015 Undergraduate students Benjamin Klempay and Adam Houston, at Yale University, on collating and vetting species distribution data.

SERVICE AS REVIEWER

Nature, PNAS, Ecology Letters, Proceedings of the Royal Society B, Nature Ecology and Evolution, Nature Communications, Systematic Biology, Evolution, Journal of Animal Ecology, Evolutionary Ecology, PLoS One, NSF research grants

[Publons link](#)

WORKSHOPS & TEACHING

- 2025 **Introduction to probabilistic inference of Phylogenetic Comparative Methods (PCM) using Julia 2ed**
6-days online workshop through Transmitting Science [link](#)
- 2025 **Introduction to Diversification Models**
Part of Master’s course with Dr. Didier Casane
Universit   Paris Cit  , Paris, France
- 2024 **Diversification Models**
part of module ACP, EvoGEM coordinated by Dr. Guillaume Achaz & Dr. Paul Zaharias
Universit   Paris Cit  , Paris, France
- 2023 **Introduction to probabilistic inference of Phylogenetic Comparative Methods (PCM) using Julia**
5-days online workshop through Transmitting Science [link](#)
- 2022 **Basic Introduction to Julia**
Workshop for the 10th Biennial conference of the International Biogeography Society
Vancouver, Canada (Virtual given the covid-19 pandemic)
- 2022 **Understanding macroevolutionary dynamics using RANDA and JPANDA**
1-day online workshop through Transmitting Science with Dr. H  l  ne Morlon [link](#)
- 2021 **Introduction to Historical Biogeography**
Part of Master course ‘‘Biology of Ecological Systems (Biologie des Syst  mes   cologiques)’’
  cole Normale Sup  rieure, Paris, France (Virtual given the covid-19 pandemic)

- 2021 Julia practical**
Part of Master course “Computational Biology”
École Normale Supérieure, Paris, France
- 2020 Introduction to Historical Biogeography**
Graduate level course “EcoSum: Ecological Models and Beyond”
Laboratoire d’Ecologie Alpine (LECA), Grenoble, France (Virtual given the covid-19 pandemic).
- 2020 Introduction to Historical Biogeography**
Part of Master course “Biology of Ecological Systems (Biologie des Systèmes Écologiques)”
École Normale Supérieure, Paris, France (Virtual given the covid-19 pandemic)
- 2017 Introduction to Julia**
YCRC Bootcamp: Introduction to Julia, [link](#)
Yale Center for Research Computing
Yale University, CT, USA
- 2015 Teaching Fellow for Evolutionary Biology**
Professor: Jeff Powell, Ph.D. and Steve Stearns, Ph.D.
Yale University, CT, USA
- 2014 Guest Lecturer for Introductory Statistics: Life Sciences**
Introduction to Likelihood and Bayesian Inference
Professor: Walter Jetz, Ph.D.
Yale University, CT, USA
- 2014 Teaching Fellow for Introductory Statistics: Life Sciences**
Professor: Walter Jetz, Ph.D.
Yale University, CT, USA
- 2013 Teaching Fellow for General Ecology**
Professor: David Post, Ph.D. and David Vasseur, Ph.D.
Yale University, CT, USA
- 2011 Teaching Assistant for Vertebrates Theory Class**
Professor: Carlos Daniel Cadena, Ph.D.
Universidad de los Andes, Bogotá, Colombia
- 2010 Teaching Assistant for Animal Physiology Laboratory Class**
Professor: Adolfo Amézquita, Ph.D.
Universidad de los Andes, Bogotá, Colombia

REFERENCE CONTACTS

- Hélène Morlon** helene.morlon@bio.ens.psl.eu tel: +33 (0)1 44 32 35 35
CNRS research director, IBENS, École Normale Supérieure, UMR 8197 CNRS
46 rue d’Ulm, 75005 Paris, France
- Walter Jetz** walter.jetz@yale.edu tel: +1 (203) 432 7540
Associate Professor, Department of Ecology and Evolutionary Biology, Yale University
165 Prospect St., 06511 New Haven, CT, USA
- Michael Landis** michael.landis@wustl.edu tel: +1 (314) 935 8082
Associate Professor, Department of Biology, Washington University in St. Louis
One Brookings Dr., 63130 St. Louis, MO, USA
- Carlos Daniel Cadena** ccadena@uniandes.edu.co tel: +57 (1) 339 4949 ext. 2072
Professor, Departamento de Ciencias Biológicas, Universidad de los Andes
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