

## Roberto Márquez, PhD.

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### Education

- 2013 – 2020 *PhD. Ecology & Evolution.* University of Chicago. Chicago, IL, USA.  
Thesis: The evolutionary, biogeographic, and genetic origin of color pattern diversity in *Phyllobates* poison-dart frogs.  
Dissertation committee: Marcus Kronforst (advisor), Trevor Price, John Novembre (chair), Marko Horb.
- 2012 – 2013 *MS. Biological Sciences - Biology.* Universidad de Los Andes. Bogotá, Colombia.  
Thesis: Evolution of the muscular voltage-gated sodium channel in relation to toxicity in poison-dart frogs (Dendrobatidae: *Phyllobates*).  
Advisor: Adolfo Amézquita
- 2007 – 2011 *BS. Biology.* Universidad de Los Andes. Bogotá, Colombia.  
Thesis: Parallel evolution of the aposematic syndrome in poison-dart frogs of the genus *Phyllobates*?  
Advisor: Adolfo Amézquita

### Academic Positions

- Starting 08/2021 Postdoctoral Fellow. Department of Ecology and Evolutionary Biology and Michigan Society of Fellows. University of Michigan. Ann Arbor, MI. USA.
- 2020 – 2021 Postdoctoral Scholar. Department of Ecology and Evolution, University of Chicago. Chicago, IL. USA. Mentors: Marcus Kronforst and Lauren O'Connell (Stanford University).
- 2013 COLCIENCIAS Research Assistant. Biological Sciences Department, Universidad de Los Andes. Bogotá, Colombia. .

### Additional Training

- 2021 Mentoring Training for Postdocs (8 weeks). Office for Postdoctoral and Graduate Affairs. Biological Sciences Division, University of Chicago.
- 2019 *Xenopus* genome editing workshop. National *Xenopus* Resource, Marine Biological Laboratory. Woods Hole, MA. USA.
- 2017 Course Design and College Teaching graduate course (11 weeks). Chicago Center for Teaching, University of Chicago.
- 2014 Summer Institute on Statistical Genetics. University of Washington.
- 2014 Society for Systematic Biologists Phylogenomics Summer School.
- 2010 Master Class in Evolutionary Biogeography (one semester). Australian National University.

## Teaching Experience

### Graduate Teaching Assistant:

- 2015 – 2018            Population Genetics (graduate course); Molecular Phylogenetics (graduate course); Ecology in the Anthropocene; Evolution and Ecology (lab instructor); Molecular and Cell Biology.  
University of Chicago, Chicago, IL. USA.
- 2012 – 2013            Animal Behavior (lab instructor); Animal Physiology (lab instructor); Biology for Psychology (lab instructor).  
Universidad de Los Andes, Bogotá, Colombia.

### Undergraduate Teaching Assistant:

- 2010 – 2011            Animal Behavior; Animal Physiology; Biology for Psychology; Vertebrate Zoology.  
Universidad de Los Andes, Bogotá, Colombia.

## Curatorial Experience

- 2009                    Collection assistant (volunteer). Collection of Amphibians and Reptiles, ANDES Museum of Natural History. Universidad de los Andes, Bogotá, Colombia.

## Peer-reviewed Publications and Manuscripts in Review

\*Equal Contribution † Mentee coauthor

Rueda-Almonacid, J.V., Salazar, E.N., Gil-Acero, J., Dorado, A., **Márquez, R.**, Chaves-Portilla, G., Amézquita, A. *In review*. A new species of Andean poison frog (Andinobates, Dendrobatidae) from Colombia: the golden frog of the Supatá region. *Zootaxa*.

**Márquez, R.** Linderoth, T.P., Mejía-Vargas, D., Nielsen, Amézquita, A.,\* Kronforst, M.R.\* 2020. Divergence, gene flow and the origin of leapfrog geographic distributions: The history of color pattern variation in *Phyllobates* poison-dart frogs. *Molecular Ecology* 29(19): 3702-3719.

Gómez-Bahamón, V., **Márquez, R.**, Laverde, O.A., Jahn, A.E., Miyaki, C.Y., Restrepo, S., Cadena, C.D. 2020. Speciation associated with shifts in migratory behavior in a large radiation of birds. *Current Biology* 30(7): 1312-1321.

Dispatch: Toews, D.P.L., Baiz, M.B. 2020. Evolution: Speciation by migratory drop-off in Flycatchers. *Current Biology*. 30 (7): R309-R311.

Mendoza A.M., **Márquez, R.**, Molina-Zuluaga, C., Mejía-Vargas, D., Palacios-Rodríguez, P. 2019. New records and distribution extension of the rare glassfrog *Hyalinobatrachium chirripoi* (Anura: Centrolenidae) on both sides of the Andes in Colombia. *Amphibian and Reptile Conservation* 13(2): 145-151 (e196).

**Márquez, R.**, Ramírez-Castañeda, V<sup>†</sup>, Amézquita, A. 2019. Does batrachotoxin autoresistance co-evolve with toxicity in *Phyllobates* poison-dart frogs? *Evolution* 73 (2): 390-400.

Rogers, R.L\*., Zhou, L\*., Chu, C., **Márquez, R.**, Corl, A., Linderoth, T.P., Freeborn, L., McManes, M., Xiong, Z., Zheng, J., Guo, C., Xun, X., Kronforst, M.R., Summers, K., Wu, Y., Yang, H.,

Richards-Zawacki, C.L., Zhang, G\*, Nielsen, R\*. 2018. Genomic takeover by transposable elements in the Strawberry poison frog. *Molecular Biology and Evolution* 35 (12): 2913-2927.

Covered by Genome Media: [Link](#).

Casas-Cardona, S<sup>†</sup>, **Márquez, R.**, Vargas-Salinas, F. 2018. Different colour morphs of the poison frog *Andinobates bombetes* (Dendrobatidae) are similarly effective visual predator deterrents. *Ethology* 124 (4): 245-255.

Sepúlveda V.E.\*, **Márquez R\***, Turissini, D., Goldman, W., Matute, D.R. 2017. Genome sequences reveal cryptic speciation in the human pathogen *Histoplasma capsulatum*. *mBio* 8 (6): e01339-17.

Commentary: Gladioux P. 2018. Updates in the language of *Histoplasma* biodiversity. *mBio* 9 (3): e00181-18.

**Márquez, R\***, Mejía-Vargas<sup>\*</sup>, D., Palacios-Rodríguez, P., Ramírez-Castañeda, V<sup>†</sup>, Amézquita, A. 2017. A new species of *Andinobates* (Anura: Dendrobatidae) from the Urabá region of Colombia. *Zootaxa* 4290 (3): 531-546.

Amézquita, A., **Márquez, R.**, Medina, R., Mejía-Vargas, D., Kahn, T.R., Suárez, G., Mazariegos, L. 2013. A new species of Andean poison frog, *Andinobates* (Anura: Dendrobatidae), from the northwestern Andes of Colombia. *Zootaxa* 3620 (1): 163–178.

Acevedo, A.A. Wake, D.B., **Márquez, R.**, Silva, K., Franco, R., Amézquita, A. 2013. Two new species of Salamander, genus *Bolitoglossa* (Amphibia: Plethodontidae), from eastern Colombia. *Zootaxa* 3609 (1): 069–084.

**Márquez, R.**, Corredor, G., Galvis, C., Góez, D., Amézquita, A. 2012. Range extension of the critically endangered true poison-dart frog, *Phyllobates terribilis* (Anura: Dendrobatidae), in western Colombia. *Acta Herpetologica* 7(2): 341-345.

## Manuscripts in Preparation

**Márquez, R.** *In preparation*. How do poisonous frogs and birds resist batrachotoxin? *Journal of General Physiology*.

**Márquez, R.** *In preparation*. Tadpole cannibalism in *Phyllobates* poison frogs.

**Márquez, R.**, Mejía-Vargas, D., Gonzalez, M., Palacios-Rodríguez, P., Brown, J.L., Kronforst, M.R. *In preparation*. Disentangling the origin of a color pattern cline in *Phyllobates* poison frogs.

## Species accounts (not peer-reviewed)

Salazar, E.N. **Márquez, R.** Chaves-Portilla, G. Dorado-Correa, A.M. Amézquita, A. 2016. Supatá Golden Frog. *Andinobates supatae*. In: Kahn, TR. La Marca, E. Lötters, S. Brown, JL. Twomey, E. Amézquita, A. (Eds.). Aposematic Poison Frogs (Dendrobatidae) of the Andean Countries: Bolivia, Colombia, Ecuador, Perú and Venezuela. Conservation International Tropical Field Guide Series. Bogotá.

## Selected Presentations

2021            Institute of Science and Technology, Austria. Klosterneuburg, NOE. Austria.

- 2021 Department of Biology. University of Rochester. Rochester, NY. USA.
- 2020 Department of Biological Sciences. University of Montana. Missoula, MT. USA.
- 2020 Colombian Association of Herpetology virtual seminar series.
- 2020 Department of Zoology. Southern Illinois University. Carbondale, IL. USA.
- 2020 School of Biological Sciences. University of Queensland. Saint Lucia, QLD, Australia.
- 2020 Behavioral Ecology Group. University of Melbourne. Melbourne, VIC. Australia.
- 2019 Natural Sciences Institute, Universidad Nacional de Colombia. Bogotá, D.C. Colombia.
- 2018 Department of Biological Sciences. Purdue University. West Lafayette, IN. USA.
- 2016 Institute for Mind and Biology. University of Chicago. Chicago, IL. USA.
- 2014 Invited talk at the X Latin American Congress of Herpetology. Cartagena, BO. Colombia.

### Grants and Fellowships

- 2021 Postdoctoral Fellowship. Michigan Society of Fellows. University of Michigan. USD \$200,000. Role: PI.
- 2019 Brien O'Brien and Mary Hasten Scholarship to attend the *Xenopus* genome editing workshop at the Marine Biological Laboratory. USD \$1,500.
- 2018 National Science Foundation Enabling Discovery through Genomic Tools (EDGE). USD \$1,600,000. Role: Co-prepared with Lauren A. O'Connell (PI, Stanford) and Marcus R. Kronforst (Co-PI, UChicago).
- 2018 University of Chicago Biological Sciences Division Dean's Council Student Travel Award. USD \$600.
- 2017 Hinds Fund. Committee on Evolutionary Biology, University of Chicago. USD \$2,000. Role: PI.
- 2017 National Science Foundation Doctoral Dissertation Improvement Grant. USD \$20,956. Role: Co-PI (PI: Marcus R. Kronforst, UChicago).
- 2016 Biological Sciences Division Recruitment Travel Award. University of Chicago. USD \$350.
- 2016 Steiner award for student travel. Biological Sciences Division, University of Chicago. USD \$1,460.
- 2015 National Geographic Society Young Explorers Grant. USD \$4,600. Role: PI.
- 2014 Travel Award to attend the X Latin American Congress of Herpetology. USD \$750.
- 2014 Dean's International Student Second Year Fellowship. Biological Sciences Division. University of Chicago.
- 2014 Full scholarship to attend the 19th Summer Institute in Statistical Genetics at the University of Washington.
- 2014 Hinds Fund. Committee on Evolutionary Biology, University of Chicago. USD \$1,600. Role: PI.

- 2014 University of Texas travel grant to attend the Society for Systematic Biologists Phylogenomics Summer School. USD \$250.
- 2012 Basic Sciences Research Grant, Vice Chancellor for Research, Universidad de Los Andes. USD \$20,400. Role: Co-PI (PI: Adolfo Amézquita, UniAndes).
- 2012 Fellowship for Young Researchers and Innovators. Colombian Administrative Dept. of Science, Technology and Innovation, COLCIENCIAS. USD \$7,500. Role: PI.
- 2012 Proyecto Semilla. Faculty of Sciences. Universidad de Los Andes. USD \$1,700. Role: PI.
- 2012 Travel stipend to attend the World Congress of Herpetology VII. Awarded by Universidad de Los Andes. USD \$700.
- 2012 SSE International travel stipend for the 1st Joint Congress on Evolutionary Biology: Evolution 2012. USD \$960.
- 2011 Colombia Biodiversa Scholarship. Alejandro Angel Escobar Foundation. USD \$1,600. Role: PI.
- 2011 Latin American Travel Award for the Joint meeting of the Animal Behavior Society and the International Ethological Conference. USD \$1,365.

### **Awards, and Distinctions**

- 2012 Otto de Greiff Award: National award to the best undergraduate theses. Natural Sciences Category. 1st Place.
- 2011 Genesis Award (honorable mention) to the best poster presented by an undergraduate at the Joint meeting of the Animal Behavior Society and the International Ethological Conference.

### **Student Mentoring**

- 2018 – 2019 Kaylin Janicke. Undergraduate at Southern Illinois University.
- 2017 – 2018 Olivia Catau. Undergraduate at the University of Chicago. Senior thesis co-advised with Mark Webster and Marcus Kronforst.
- 2017 Madison Olmsted. Undergraduate at the University of Chicago.
- 2014 – 2017 Valeria Ramírez-Castañeda. MSc. student at Universidad de los Andes, Colombia. Thesis co-advised with Adolfo Amézquita.
- 2015 – 2016 Santiago Casas-Cardona. Undergraduate at Universidad del Quindío, Colombia. Senior thesis co-advised with Fernando Vargas-Salinas.

### **Outreach activities**

- 2021 Classroom visit (virtual) at Bret Harte Elementary (Chicago Public Schools) to discuss the frog life cycle with Kindergarteners.
- 2017 – 2021 Participant of the *Skype a Scientist* program, where I have visited nine middle and high school biology classrooms and after-school programs  
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across the US via videoconference to speak about evolutionary biology, science as a career, and how scientific facts come to be.

- 2015 – 2017 Volunteer teaching assistant for the “Brains!” workshop led by Dr. Stephanie Palmer at the University of Chicago, guiding 7th grade students from the Chicago South Side through an introduction to electrophysiology and neuroscience.
- 2014 Guest lecturer at the University of Chicago Summer Institute for the Gifted, talking to 8-10 year-olds about evolution, biodiversity and conservation.
- 2013 Participant of the Biodiversity Fair at Colegio la Inmaculada in Orocué, Casanare, Colombia, where we conducted activities with elementary school students aimed at discussing local biodiversity, its conservation, and myths around “infamous” animals such as toads and snakes.

### Professional Service

- 2013 – Present Peer-reviewer for *The American Naturalist*, *Biological Journal of the Linnean Society*, *BMC Evolutionary Biology*, *Evolution*, *Gene*, *Genetica*, *Journal of General Physiology*, *Molecular Ecology*, *Molecular Phylogenetics and Evolution*, *The Journal of Natural History*, and *Phyllomedusa*.
- 2020 – Present Academic adviser for Fundación EduPacífico, a nonprofit organization seeking to increase access to higher education for underserved communities in Western Colombia.
- 2020 – Present Member of the IUCN's Amphibian Specialist Group Colombia, a task force aimed at re-evaluating the conservation status of Colombia's amphibians.
- 2019 – Present Expert advisor on Colombian dendrobatid frogs for the Alliance for Zero Extinction.
- 2019 – 2020 Proposal reviewer for the Botas al Campo (Boots on the Ground) initiative of the Colombian Association of Herpetology, which funds herpetological research by undergraduates and recent graduates.
- 2016 – 2018 Student Representative for the Department of Ecology and Evolution at the University of Chicago.
- 2017 Organizer of the Symposium on Coloration and Genetics in Poisonous Frogs at the XI Latin American Congress of Herpetology. Quito, Ecuador. Co-organized with Rebecca D. Tarvin.
- 2016 Reviewer of the Manual for Collecting Genetic Material in Field Studies issued by the Alexander von Humboldt Institute of Colombia.
- 2014 Organizer of the Symposium on the Evolution of Communication Signals in Amphibians and Reptiles at the X Latin American Congress of Herpetology. Cartagena, Colombia. Co-organized with Fernando Vargas-Salinas.
- 2012 Member of the Graduate Student Committee of the Faculty of Sciences at Universidad de los Andes.

### Conference Presentations

- 2020 World Congress of Herpetology. Dunedin, New Zealand.
- 2019 Midwest Population Genetics Meeting. Chicago, IL. USA.
- 2019 Evolution 2019. Providence, RI. USA.
- 2018 Joint Meeting of Ichthyologists and Herpetologists. Rochester, NY. USA.
- 2017 Latin American Congress of Herpetology. Quito, Ecuador.
- 2016 Colombian Congress of Herpetology. Medellín, Colombia.
- 2016 Midwest Population Genetics Meeting. Chicago, IL. USA.
- 2016 World Congress of Herpetology. Tonglu, China.
- 2016 Evolution 2016. Austin, TX. USA.
- 2014 Latin American Congress of Herpetology. Cartagena, Colombia.
- 2014 Evolution 2014. Raleigh, NC. USA.
- 2013 Behaviour 2013. Newcastle-Gateshead, UK.
- 2012 World Congress of Herpetology. Vancouver, BC. Canada.
- 2012 Evolution 2012. Ottawa, ON. Canada.
- 2011 Behavior 2011. Bloomington, IN. USA.
- 2011 Evolution 2011. Norman, OK. USA.
- 2010 Colombian Congress of Zoology. Medellín, Colombia.