Anyi Mazo-Vargas, Ph.D.

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EDUCATION

Cornell University, Ithaca, NY.	Ph.D. Entomology	Aug 2020
University of Puerto Rico – Mayagüez, Puerto Rico.	M.Sc. Biology	May 2011
Universidad del Valle, Cali – Colombia.	B.Sc. Biology	Dec 2005

ACADEMIC APPOINTMENTS

NSF-Postdoctoral Research Fellow in Biology at George Washington University	Mar 2022- Present
Ford Foundation Fellow at George Washington University	Jun 2021-Mar 2022
Postdoctoral Researcher at George Washington University	Sep 2020-June 2021

PUBLICATIONS

*:corresponding author; ^:Undergraduate co-author

In Review

Heryanto, C., **Mazo-Vargas, A.**, Martin, A. 2022. Efficient hyperactive piggyBac transgenesis in Plodia pantry moths. *In review* at *Frontiers in Genome Editing*. bioRxiv preprint

Cicconardi, F., Milanetti, E., de Castro, É.C.P., **Mazo-Vargas, A.**, Van Belleghem, S.M., Ruggieri, A.A., Rastas, P., Hanly, J., Evans, E., Jiggins, C.D., McMillan, W.O., Papa, R., Marino, D. di, Martin, A., Montgomery, S.H., 2022. Evolutionary dynamics of genome size and content during the adaptive radiation of Heliconiini butterflies. *In review* at *Science Advances*. bioRxiv 2022.08.12.503723.

Peer-reviewed

Mazo-Vargas, A., Langmüller, A. M., Wilder, A.^, van der Burg, K. R. L., Lewis, J. J., Messer, P. W., Zhang, L., Martin, A., Reed, R.D. 2022. Deep cis-regulatory homology of the butterfly wing pattern ground plan. Science 378(6617): 304–308. ** Journal cover.

Heryanto, C., Hanly, J. J., **Mazo-Vargas, A.**, Tendolkar, A., Martin, A. 2022. Mapping and CRISPR homology-directed repair of a recessive white eye mutation in *Plodia* moths. iScience 25(3):103885.

Kolchanova, S.; Komissarov, A.; Kliver, S.; **Mazo-Vargas, A**.; Afanador, Y.; Velez-Valentín, J.; de la Rosa, R.V.; Castro-Marquez, S.; Rivera-Colon, I.; Majeske, A.J.; Wolfsberger, W.W.; Hains, T.; Corvelo, A.; Martinez-Cruzado, J.-C.; Glenn, T.C.; Robinson, O.; Koepfli, K.-P.; Oleksyk, T.K. Molecular Phylogeny and Evolution of Amazon Parrots in the Greater Antilles. Genes 12, 608.

van der Burg, K. R. L., Lewis, J. J., Brack, B.J., Fandino, R.A., **Mazo-Vargas, A.,** Reed, R.D. 2020. Genomic architecture of a genetically assimilated seasonal color pattern. Science 370, 721–725.

Peng, C.L.^, **Mazo-Vargas, A.**, Brack, B.J.^, Reed, R.D. 2020. Multiple roles for *laccase2* in butterfly wing pigmentation, scale development, and cuticle tanning. Evolution & Development 22, 336–341.

Genova, L.A., Johnson, B.B., Castelli, F.R., Arcila Hernández, L.M., Chang van Oordt, D., Demery, A-J., Fletcher, N.K., Goud, E.M., Holmes, K.D., Houtz, J.L., Howard, M.M., Hughes, J.J., Jensen, K.H., Kunerth, H.D., Law, E.P., Lombardi, E., **Mazo-Vargas, A**., McDonald, C.A., Mittan, C.S., Ryan, T.A., Tracy, A.M., Uehling, J.J., Weiss, A.K., Smith, M.K. 2020. What is speciation, how does it occur, and why is it important for conservation?. CourseSource DOI:10.24918/cs.2020.28.

Lewis, J. J., Geltman, R.C., Pollak, P.C., Rondem, K.E., Belleghem, S.MV., Hubisz, M.J, Munn, P.R., Zhang, L., Benson, C., **Mazo-Vargas, A**., Danko, C.G, Counterman, B.A., Papa, R., Reed, R.D. 2019. Parallel evolution of ancient, pleiotropic enhancers underlies butterfly wing pattern mimicry. Proc. Natl. Acad. Sci. U.S.A. 116(48): 24174-24183

Mazo-Vargas, A., Concha, C., Livraghi, L., Massardo, D., Wallbank, R.W.R., Zhang, L., Papador, J.D., Martinez-Najera, D., Jiggins, C.D., Kronforst, M.R., Breuker, C.J., Reed, R.D., Patel, N.H., McMillan, W.O., Martin, A. 2017. Macroevolutionary shifts of *WntA* function potentiate butterfly wing-pattern diversity. Proc. Natl. Acad. Sci. U.S.A. (114), 10701–10706. ** Won **LaMont C. Cole Award** from the EEB department at Cornell University

Zhang, L., **Mazo-Vargas, A.**, Reed, R.D. 2017. Single master regulatory gene coordinates the evolution and development of butterfly color and iridescence. Proc. Natl. Acad. Sci. U.S.A. (114) 10707–10712 ** Won **Cozzarelli Prize** from the National Academy of Sciences

Lewis, J. J., van der Burg, K. R. L., **Mazo-Vargas, A.**, Reed, R.D. 2016. ChIP-seq-Annotated *Heliconius erato* genome highlights patterns of cis-regulatory evolution in Lepidoptera. Cell Reports (16), 2855-2863.

Mazo-Vargas, A., Park, H., Aydin, M., Buchler, N.E. 2014. Measuring fast gene dynamics in single cells with timelapse luminescence microscopy. Mol. Biol. Cell 25(22), 3699-3708.

Oleksyk, T.K., Pombert, J.F., Siu, D., **Mazo-Vargas, A.**, Ramos, B., Guiblet, W., Afanador, Y., Ruiz-Rodriguez, C.T, Nickerson, M.L., Dean, M., Logue, D., Valentin, R., Figueroa, L., Martinez-Cruzado, J.C. 2012. A locally funded Puerto Rican parrot (*Amazona vittata*) genome sequencing project increases avian data and advances young researcher education. Giga Science, 1(1), 14214.

Miscellaneous

Mazo-Vargas, A. In the Spotlight – Graduate Student. J Exp Zool (Mol Dev Evol). 2020; 1–2. The Journal of Experimental Zoology Part B: Molecular and Developmental Evolution. Interview for the "In the Spotlight" section https://doi.org/10.1002/jez.b.22993.

AWARDS AND HONORS

2022	NSF Postdoctoral Research Fellowships in Biology (PRFB)	$138,000
2021	Postdoctoral fellow of the NAS / Ford Foundation	$50,000
2019	First place at the Graduate Student Poster Competition in the Biennial meeting of the Pan-American Society for Evolutionary Developmental Biology.	
2017	Cozzarelli Prize from the National Academy of Science. Best paper published in the biological sciences field in the proceedings of the national academy of sciences (PNAS).	
2018	LaMont C. Cole Award from the Department of Ecology and Evolutionary biology at Cornell University. Outstanding paper published by a graduate student in 2017-2018.	
2015-2017	NSF Graduate Research Fellowship (GRFP)	$138,000
2014, 2018	Cornell Diversity Fellowship	$74,230

TEACHING and MENTORING EXPERIENCE

Guest Lecture

Developmental Biology course. Leading Gene expression and *Drosophila* development modules. The George Washington University – Washington, DC.

Laboratory Teaching Assistant

Phylogenetics and Comparative Genomics (Online course). University of Puerto Rico – Mayagüez.

Laboratory of Cellular Physiology. Department of Biology, University of Puerto Rico, Mayagüez.

Laboratory of Genetics. Department of Biology, University of Puerto Rico, Mayagüez.

Arthropod zoology laboratory. Department of Biology, Universidad del Valle, Cali, Colombia.

Microbiology laboratory. Department of Biology, Universidad del Valle, Cali, Colombia.

Mentoring

Christian Pecoraro : 2022-present; Alexis Wilde: 2021-2022; Alan Liang: 2019-2020; Brian Liang: 2019-2020; Benjamin Brack: 2019; Ceili Peng: 2015-2017; Christina Ruiz-Rodriguez: 2010-2011; Daysha Ferrer-Torres: 2010-2011.

SELECTED POSTER and TALKS

Mazo-Vargas, A. Martin A. CRISPR/Cas9 dissection of cis-regulatory elements in emerging evo-devo systems — A butterfly wing color pattern tale. **Selected talk for the Postdoctoral symposium**. Joint SDB-PASEDB meeting. Vancouver, Canada. July 22, 2022.

Mazo-Vargas, A. The cis-regulatory architecture of butterfly's wing pattern groundplan. **Invited talk**. Lepidoptera seminar " Lepinar. June 13, 2022. Online.

Mazo-Vargas, A. Evolution of butterfly color patterns set by one gene and its 'control panel'. **Invited talk**. Emerging Scholars Integrative Biology Program. Biology Department at Boston University. Sep 27, 2021. Online.

Mazo-Vargas, A. Reed, R.D. How butterflies make their wing patterns. **Invited talk**. Thomas C. Emmel Seminar Series presents Expanding Horizons in Lepidoptera Research. Department of Natural History at the Florida Museum, University of Florida. Feb 23, 2021. Online

Mazo-Vargas, A. Drawing butterfly wing color patterns, the EvoDevo style. **Invited talk**. Early Career Symposium – Evolutionary Developmental Biology II. Stowers Research Conferences. Dec 4, 2020. Online.

Mazo-Vargas, A. Reed, R.D. 2019. Cis-regulatory architecture of butterfly wing pattern evolution. **Poster**. 3rd Biennial meeting of the Pan-American Society for Evolutionary Developmental Biology. Jul 30- Aug 2. Miami, Florida. ** Won first place at the Graduate Student Poster Competition.

OUTREACH AND SERVICE

Elected Trainee Representative for the Pan-American Society for Evolutionary Developmental Biology. July 2022.

Radio program in explein.mi (https://radionopal.com/programas/explein-mi/). I talk to broad audiences about my research in butterflies, genetics, and evolution. The program is recorded in Spanish. On air February, 24 2021.

Volunteer at Científico Latino, Mentoring Latino students in the application process, Ph.D. life and building community. 2020-2021.

Coordinator of the butterfly room for the Annual Department of Entomology Open Day: Insectapalooza. The butterfly room is one of the biggest attractions of the day, where thousands of visitors have an interactive experience with butterflies and moths. 2016-2019.

Volunteer for the Diversity Preview Weekend (DPW) at Cornell. This event brings in students from underrepresented backgrounds to learn about the application process to graduate school, meet faculty and attend workshops. 2017-2019.

Peer-Mentor for the Multicultural Academic Council (MAC) at Cornell. Mentoring opportunity for graduate students from backgrounds historically underrepresented in academia. 2019.

Co-organizer of the BugZoo Activity for Expanding Your Horizons, which is an annual conference aimed at providing hands-on experience with STEM fields to 7th - 9th-grade girls. 2017.

Science and Latina perspective adviser in the movie Son of the Monarchs, released in Jan 2021.

Mazo-Vargas, A. Butterfly GenePaint v 1.0. Rockefeller evening "Reimagining Biology." 10th Annual Imagine Science Film Festival. Achievements: get broader audiences, mainly artists, to get a snap of our understanding of wing color pattern formation, why it is important to study it, and inspiring new ideas for films. Invited talk. Oct 18, 2017.

Chair and co-organizer of the symposium of the Entomology department at Cornell University. Jugatae, Entomology Grad Student Society, Cornell University, NY. 2015 -2017.

Co-organizer of the EvoDay symposium. As part of EvoGroup, a graduate-led organization in Ecology and Evolutionary biology, Cornell University, NY. 2015.

ONLINE RESOURCES

Twitter thread. October 20, 2022. Summary of paper “Deep cis-regulatory homology of the butterfly wing pattern ground plan” published in Science.
https://twitter.com/AnyiMazo/status/1583180528416870400?s=20&t=d5VcDWQNU2RZ5jRUSGwr6Q

Butterfly wing patterns emerge from ancient “junk” DNA. October 21, 2022. **Cornell Chronicle**
https://news.cornell.edu/stories/2022/10/butterfly-wing-patterns-emerge-ancient-junk-dna

Scientists Can Now Repaint Butterfly Wings. **The Atlantic**. Ed Yong. September 18, 2017.
https://www.theatlantic.com/science/archive/2017/09/the-genes-that-paint-butterflies/540159/

Genes Color a Butterfly’s Wings. Now Scientists Want to Do It Themselves. **The New York Times**. Nicholas Wade. September 18, 2017.
https://www.nytimes.com/2017/09/18/science/butterfly-wing-color-patterns-gene-editing.html

Mazo-Vargas, A. 2010. Pest weevils species images. University of Puerto Rico.
http://www.forestryimages.org/browse/autthumb.cfm?aut=65051

OTHER PROFESSIONAL EXPERIENCE

Internship at the Veterinary Medicine R&D at Zoetis. Jun 2018 – Jul 2018

Laboratory Research Assistant, Department of Biology, Duke University. 2011 – 2014

Technician, International Center for Tropical Agriculture - CIAT, Palmira, Colombia. 2006 – 2007

PROFESSIONAL ORGANIZATIONS

Trainee Representative of the Pan-American Soc. for Evol. Dev. Biology (elected position) 2014-2020

Member of the Entomological Society of America 2019, 2010, 2021

Member of the Society for the Study of Evolution 2016, 2019

PROFESSIONAL DEVELOPMENT

2022 NPA Virtual Conference. Virtual.	May 2022
Python Bootcamp – GWU	April 2022
Building Future Faculty Program. NC State University	March 2022
Building Mentorship Skills Program. Cornell University	February 2021
Institute on Teaching and Mentoring – SREB Conference, Georgia	October 24-27 2019
NextGen Professors program. Cornell University, NY	2018-2019
ComSciCon Cornell, Science Communication Conference, Cornell University, NY.	July 2017
4th Annual BEST (Broadening Experiences in Scientific Training) Symposium.	May 3-4, 2017
Summer Success Symposium (S3).	August 16, 2017