

CECILIA ZUMAJO-CARDONA

cezumajo.github.io

2900 Southern Blvd, Bronx, NY 10458

(+1) 6463231744 ◊ czumajo@nybg.org

EDUCATION

The New York Botanical Garden & The Graduate Center- CUNY - 2021

Ph.D. in Biology, Plant Science subprogram

The New York Botanical Garden & The Graduate Center- CUNY - 2019

Master of Philosophy Biology

B.Sc. in Biology, Universidad de Antioquia, Medellín, Colombia - 2015

PROFESSIONAL POSITIONS

Assistant Curator - New York Botanical Garden 2025 - Currently

Adjunct - The graduate Center, CUNY Plant science subprogram 2025 - Currently

LANGUAGES

Spanish (Mother tongue), English, Italian, French.

ACADEMIC EXPERIENCE

STARS@UNIPD Postdoctoral researcher - May 2024 to January 2025

Universita degli Studi di Padova. Project title: "Deciphering the molecular mechanisms behind seed diversity in non-model species: case of study in *Cycas* and *Wollemia*."

EMBO Postdoctoral researcher - October 2021 to April 2024

Universita degli Studi di Milano. Project title: "Deciphering the maternal role in seed formation using transcriptome and genetic variation analyses."

Lab. assistant, Evo-Devo in Plants. November 2015 to August 2016

Universidad de Antioquia. P.I. Natalia Pabón - Mora. Project title: "Functional Evolution of the *FRUITFULL* gene lineage in the tomato family (Solanaceae)"

EDEN, Evo-Devo-Eco Network Undergraduate Fellowship. June to August, 2015

New York Botanical Garden, Genomics program, PI: Barbara Ambrose "*Can the fruit developmental network of Arabidopsis thaliana be extrapolated to early diverging eudicots?*".

Cathedral teacher assistant. January- June 2015

Maths for High school, Medellín, Colombia

Young researcher. 2013 - 2014

Project '*Duplicacion de genes FUL-like en Ranunculales y su impacto en la diversificación morfológica de amapolas*'. PI: Natalia Pabón - Mora, CODI, Universidad de Antioquia, Medellín, Colombia

Herbarium assistant - 2013

Universidad de Antioquia, Medellín, Colombia

Assistant herbarium workshop: 'Herbario Universidad de Antioquia' (HUA)

PUBLICATIONS [ORCID: 0000-0002-9516-6112]

Preprints & in preparation:

Stevenson et al., **The genome of the Wollemi pine, a critically endangered “living fossil” unchanged since the Cretaceous, reveals extensive ancient transposon activity** *BioRxiv*. doi: <https://doi.org/10.1101/2023.08.24.554647> Submitted to *Cell*. 2026

Zumajo-Cardona, C., Dvorkin, A., Yu, Y., Nigris, S. Botanical gardens: the Eden for evo-devo studies in plant divers *Trends in Plant Science* In Rev.

Published:

Sondervan, V.M., Eshel, G., Varala, K., Frangos, S., Katari, M.S., Jeffers, T.L., **Zumajo-Cardona, C., Nigris, S., DeGironimo, L., Smalls, T., McCombie, R.W., Little, D.P., Ambrose, B.A, Stevenson, D.W., Coruzzi, G. 2025. Developmentally regulated genes drive phylogenomic splits in ovule evolution** *Nature communications* 16, 9589 (2025). <https://doi.org/10.1038/s41467-025-65399-3>

Zumajo-Cardona, C., Ambrose, B. A., Madrigal, Y., Pabón-Mora, N. 2025. Dehiscent fruits in Brassicaceae and Papaveraceae: convergent morpho-anatomical features with divergent underlying genetic mechanisms. *Annals of Botany*. <https://doi.org/10.1093/aob/mcaf079>

Zumajo-Cardona, C., Gabrieli, F., Anire, J., Albertini, E., Ezquer, I., Colombo, L. 2023. Evolutionary studies of the bHLH transcription factors belonging to MBW complex: revisiting their role in seed development *Annals of Botany*. <https://doi.org/10.1093/aob/mcad097>

Zumajo-Cardona, C., Aguirre, M., Castillo, R., Mizzotti, C., Di Marzo, M., Banfi, C., Mendes, M. A., Spillane, C., Colombo, L., Ezquer, I. 2023. Maternal control of triploid seed development by the *TRANSPARENT TESTA 8* transcription factor in *Arabidopsis thaliana* *Scientific reports* 13, 1316 (2023). <https://doi.org/10.1038>

Marchant, D.B., Chen, G., Cai, S. ... **Zumajo-Cardona, C. ... et al. 2022. Dynamic genome evolution in a model fern.** *Nature Plants* <https://doi.org/10.1038/s41477-022-01226-7>

Rothwell, G. W., Stockey, R. A., Stevenson, D. W., and **Zumajo-Cardona, C. 2022. Large Permineralized Seeds in the Jurassic of Haida Gwaii, Western Canada: Exploring the Mode and Tempo of Cycad Evolution** *International Journal of Plant Sciences*, 183(8), 000-000.

Zumajo-Cardona, C., and Ambrose, B. 2022. Fleshy or dry: Transcriptome analyses reveal the genetic mechanisms underlying bract development in *Ephedra* *BMC EvoDevo* 13, 10 <https://doi.org/10.1186/s13227-022-00195-4>

Zumajo-Cardona, C., Stevenson, D., Little D., and Ambrose, B. 2021. Expression analyses in *Ginkgo biloba* provide new insights into the evolution and development of the seed. *Scientific reports*. <https://doi.org/10.1038/s41598-021-01483-0>

Zumajo-Cardona, C., Frangos, S. and Stevenson, D. 2021. Seed anatomy and development in Cycads and Ginkgo, keys for understanding the evolution of seeds. *Flora* doi:10.1016/j.flora.2021.151951

Zhu, K., Zheng, X., Ye, J., Huang, Y., Chen, H., Mei, X., Xie, Z., Cao, L., Zeng, L., Larkin, R.M., Xu, Q., Perez-Roman, E., Talón, M., **Zumajo-Cardona, C., Wurtzel, E., Deng, X. 2021 Regulation of carotenoid and chlorophyll pools in hesperidia, anatomically unique fruits found only in Citrus** *Plant Physiology*, 187: 829–845, <https://doi.org/10.1093/plphys/kiab291>

Zumajo-Cardona, C., and Ambrose, B. 2021 Deciphering the evolution of the ovule genetic network through expression analyses in *Gnetum gnemon*. *Annals of Botany*; 128: 217–230.

Zumajo-Cardona, C., Pabon-Mora, N., and Ambrose, B. 2021. The evolution of *euAPETALA2* genes in vascular plants: from plesiomorphic roles in sporangia to acquired functions in ovules and fruits. *Molecular Biology and Evolution*; <https://doi.org/10.1093/molbev/msab027>

Ambrose, B., Smalls, T., and **Zumajo-Cardona, C.**, 2021. **All Type II Classic MADS-genes in the Lycophyte *Selaginella moellendorffii* are broadly yet discretely expressed in vegetative and reproductive tissues.** *Evolution and Development*; <https://doi.org/10.1111/ede.12375>

Zumajo-Cardona, C., and Ambrose, B. 2020. **Phylogenetic analyses of key developmental genes provide insight into the complex evolution of seeds** *Molecular Phylogenetics and Evolution* Vol 147; doi: 10.1016/j.ympev.2020.106778

Zumajo-Cardona, C., Vasco, A., and Ambrose, B. 2019. **The Evolution of the *KANADI* Gene Family and Leaf Development in Lycophytes and Ferns.** *Plants*. 8:313.

Zumajo-Cardona, C., Pabon-Mora, N., and Ambrose, B. 2018. **Duplication and diversification of *REPLUMLESS* – a case study in the Papaveraceae.** *Frontiers in Plant Science*. doi: 10.3389/fpls.2018.01833.

Stevenson, D., and **Zumajo-Cardona, C.** 2018. **From Plant Ontology to Gene Ontology and back.** *Current Plant Biology*. doi: 10.1016/j.cpb.2018.09.009.

Zumajo-Cardona, C., Ambrose, B., and Pabon-Mora, N. 2017. **Evolution of the *SPATULA/ALCATRAZ* Gene Lineage and expression analyses in the Basal Eudicot, *Bocconia frutecens* L. (Papaveraceae).** *EvoDevo* doi: 10.1186/s13227-017-0068-8.

Zumajo-Cardona, C., and Pabon-Mora, N. 2016. **Evolution of the *APETALA2* Gene Lineage in Seed Plants.** *Molecular Biology and Evolution*. doi:10.1093/molbev/msw059.

S. Marcellini, F. González, A. F. Sarrazin, N. Pabón-Mora, M. Benítez, A. Piñeyro-Nelson, G. L. Rezende, E. Maldonado, P. Neiva Schneider, M. B. Grizante, R. Nunes DA Fonseca, F. Vergara-Silva, V. Suaza-Gaviria, **C. Zumajo-Cardona**, E. E. Zattara, S. Casasa, H. Suárez-Baron, and F. D. Brown. 2016. **Evolutionary Developmental Biology (Evo-Devo) Research in Latin America.** *J. Exp. Zool. B Mol. Dev. Evol.* doi: 10.1002/jez.b.22687

PROGRAMMING LANGUAGES

Bash - AWK - Python (+ RNA-Seq analyses)- <https://github.com/cezumajo>

CONGRESSES, SEMINARS AND COURSES

Botany, Palm Springs, CA July, 2025

Symposium organizer: "The evolutionary history of Gnetales"

• **International Botanical Congress (IBC), Madrid, Spain** July, 2024

Talk: "Untangling the developmental genomics of the unique reproductive structures in Gnetales"

• **Flowering mechanisms workshop Palermo, Italy** June, 2024

Poster and Flash talk: "Untangling the developmental genomics of the unique reproductive structures in Gnetales"

• **EMBO course: Leadership for Postdocs, Heidelberg, Germany** April, 2023

• **26th International Conference on Sexual Plant Reproduction, Prague** June 20 to 24, 2022

Poster: "bHLH genes in the MBW complex, more than flavonoid biosynthesis genes"

• **Botany - Virtual** July 18 to 23, 2021

"Deciphering development of the seed coat in morphologically diverse seeds in members of Gnetales: Gnetum gnemon, Ephedra californica and Ephedra antisiphilitica"

• **Botany - Virtual** July 27 to 31, 2020

"Evolution of the seed coat."

- **The society for Integrative and Comparative Biology, SICB. Austin, TX** January 3 to 8, 2020
Short talk: The evolution of the integument and its implication in seed plant evolution.
- **Venice summer school 2019: Mechanism in development and evolution** August 26 to 30, 2019
EMBO. Venice, Italy. Short course.
- **Botany, Tucson, Arizona.** July 27 to 31, 2019
Two short talks: "Evolution of the integument developmental genes in seed plants" and "Anatomical development of the ovules in Cycadales."
- **The Genome access course TGAC.** November 11 to 13, 2018
Cold Spring Harbor and CUNY. New York, U.S.A. Short course.
- **II Joint Congress on Evolutionary Biology** August 19 to 22, 2018
Poster. "Fleshy fruits and Fleshy seeds in gymnosperms, a case of convergent evolution?"
- **Botany, Rochester, Minnesota.** July 21 to 25, 2018
Short talk: "Evolution of the RPL gene lineage in Papaveraceae"
- **IX Latin American Society of Developmental Biology Meeting** October 9 to 13, 2017
Short talk: "Expression analyses of fruit developmental genes in selected non-core eudicots"
- **Course: Comparative Genomics and transcriptomics in non-model species - Medellín, Colombia.** October 2 to 6, 2017
By Jeremiah Smith, University of Kentucky and Yvan Wenger, Université de Genève.
- **XIX International Botanical Congress, Shezhen, China.** July 23 to 29, 2017
Short talk: "Lycophyte evolution and development: a transcriptomic and genetic approach" Outstanding Student Award.
- **Primer Encuentro Nacional de Biología del Desarrollo, Bogotá, Colombia** September 24 to 26, 2015
Short talk: "Evolution of the APETALA 2 gene lineage in seed plants"
- **First Panamerican Evo-Devo meeting, Clark Kerr Campus, University of California Berkeley** August 5 to 9, 2015
Short talk: "Evolution of the APETALA 2 gene lineage in seed plants"
- **VII Colombian congress of botany: VII Congreso Colombiano de Botanica, Ibagué-Tolima, Universidad del Tolima** August 7 to 10, 2013
Poster exhibitor, first prize undergraduate Poster
- **Course: 'Curso de Ómicas, Actualización en genómica, transcriptómica y proteómica'** 2013
Universidad de Antioquia, Medellín, Colombia
- **Course: 'Estrategias para la conservación ex situ de recursos fitogenéticos'** 2013
Organized by the Instituto Nacional de Ciencias Agrícolas (INCA) Cuba, dictated by: Maria Esther Gonzalez Vega.
- **VI Colombian congress of botany: 'VI Congreso Nacional de Botánica'** August 11 to 15, 2011
Universidad Javeriana, Cali, Colombia

AWARDS AND GRANTS

NYBG - Pilot project - Zumajo-Cardona Co-PI

5000USD

STAR@UNIPD - STARs starting grant by Università degli studi di Padova

Postdoctoral Fellowship 170.000Euros

EMBO - European Molecular Biology Organization Postdoctoral Fellowship 132.000Euros
Seal of Excellence by the European Commission, MSCA Postdoctoral Fellowships In 2022.
Katherine Esau Award by the Botanical Society of America In 2020.
Bill Dahl Graduate Student Research Award by the Botanical Society of America \$1500
 in July 2019.
Doctoral Student Research Grant - The Graduate Center, CUNY. \$1500. In 2019.
BSA Development and Structural Section with the publication *Expression and functional studies of basal eudicot REPLUMLESS homologs during flower and fruit development.* In 2018.
First Prize, Student Research Award, with the publication *Evolution of the APETALA2 Gene Lineage in Seed Plants.* Universidad de Antioquia, Medellín, Colombia. In 2016.
EDEN, Evo-Devo-Eco Network Undergraduate Fellowship in 2015 \$3000
Best undergraduate Poster VII Colombian congress of botany: VII Congreso Colombiano de Botánica, Ibagué, Tolima. In 2013.

FIELD EXPERIENCE

Boyaca, Colombia- With Dr. Favio Gonzalez and Dr. Natalia Pabon-Mora November 2022
 Parasitic species collections

Whitewater preserve, California, February 2019 *Ephedra californica* collections

Palo Pinto Co., Texas, February 2019 *Ephedra antisiphilitica* collections

TEACHING EXPERIENCE

Plant Structure, NYBG - Continuing Education program

October 2025 - December 2025

- **Invited lecturer, Plant Evolution and Development class at SUNY courtland, NY, USA.**

Topic: Seed development and evolution

April 5 - 2023

- **Invited lecturer, Molecular Genetics class at Otterbein University, Ohio, USA.**

Topic: expression analyses: in situ hybridization and RNA sequencing

August 29 - 2022

- **Plant Structure, NYBG - Adult Education program**

February 2021 - April 2021

- **Plant Diversity, NYBG - Adult Education program**

October 2020 - November 2020

- **Principles of Biology Lab 167: Organisms. Lehman College, CUNY**

February 2020 - June 2020

- February 2019 - June 2019 *Three sections, 7.5 hours weekly*
- February 2019 - June 2019 *Three sections, 7.5 hours weekly*
- February 2018 - June 2018 *Two sections, 5 hours weekly*

Principles of Biology Lab 166: Cell and Genes. Lehman College, CUNY

August 2019 - December 2019

August 2018 - December 2019 *Three sections, 7.5 hours weekly*

- February 2018 - June 2018 *Two sections, 5 hours weekly*

STUDENT MENTORING EXPERIENCE

Master dissertation co-tutoring, to Eleonora Cavalera, University of Milano, Italy
"Deciphering the role of cytokinins in seed development and triploid block"
October 2021 - June 2022

Undergraduate dissertation co-tutoring, to Eliana Mendelson, Brandeis University
"Expression analyses of fruit genes in selected basal angiosperms" Excellence in Research Award, August 2019 - May 2020

Undergraduate dissertation co-tutoring, to Dominique Jeton Groffman, Columbia University Student *"Evolution of the SPOROCTELESS/SPEAR gene family across land plants"* February 2018 - August 2019

Mentor, PLANTS Program (Preparing Leaders and Nurturing Tomorrow's Scientists: Increasing diversity of plant scientists) Botanical Society of America, *"Botany 2020 Virtual & Botany 2021 Virtual"* 2020 -2021

OUTREACH

Mendelson, E., **Zumajo-Cardona, C.**, and Ambrose, B. **What is a leaf?** *Front. Young Minds* 10:659623. doi: 10.3389/frym.2022.659623 (Science communication paper).

Mendelson, E., **Zumajo-Cardona, C.**, and Ambrose, B. 2020. **What is a fruit?** *Frontiers for Young Minds* 8:27. doi: 10.3389/frym.2020.00027 (Science communication paper).

Zumajo-Cardona, C., and Pabón-Mora, N., 2017 **APETALA2 un gen que forma flores y frutos.** *Experimenta - Universidad de Antioquia* (Science communication article in spanish)

Podcast episode In Defense of plants, Episode 319. *Evolution of the seed*
<https://www.indefenseofplants.com/podcast/2021/5/30/4fvzoezmxzbz791g2hh3cb7lige7oy9>

SERVICES

BSA International affairs committee - Student representative 2019 – 2021

Plant Science advisory committee meeting, Lehman College CUNY 2019 – 2020

Plant Science Executive committee Student Representative, CUNY 2018 – 2019

EDITORIAL ROLES

Subject Editor Flora, Elsevier

Reviewer Editor Evolutionary Developmental Biology- Frontiers

PROFESSIONAL REFERENCES

Dr. Dennis W. Stevenson
Emeritus Curator NYBG and Editor, Botanical Review
email: dws@nybg.org

Dr. Natalia Pabón - Mora
Associate Professor, Universidad de Antioquia
email: lucia.pabon@udea.edu.co

Dr. Lucia Colombo
Professor, Università degli Studi di Milano
email: lucia.colombo@unimi.it