

## Daniel (Dani) Fernando Paulo, PhD

Curriculum Vitae

March 16, 2026

Postdoctoral fellow. Department of Biology, The University of New Mexico. 219 Yale Blvd NE, Castetter Hall 239, Albuquerque, NM 87106, USA. email: [dpaulo@unm.edu](mailto:dpaulo@unm.edu) | phone: 808-936-6655

### RESEARCH INTERESTS

I am an integrative evolutionary biologist who combines genetics, molecular biology, and functional genomics to understand the origins and genetic basis of adaptation and speciation in insects. In recent years, my research has focused on the molecular characterization of genes underlying niche specialization in parasitic blowflies (Diptera: Calliphoridae) and pigmentation in true fruit flies (Diptera: Tephritidae). These projects often bridge foundational and applied insect science, leveraging genomic technologies to support the management of invasive pest species. My current postdoctoral research at UNM focuses on the genetics underlying host manipulation by parasitic insects (extended phenotype), including plant gall formation in the Southwestern *Aciurina*–Rabbitbrush system and the physiological manipulation of fly hosts by jewel wasps (Hymenoptera: Pteromalidae).

### EDUCATION

<b>PhD in Genetics and Molecular Biology</b> Biology Institute, State University of Campinas	Dec. 2019
<b>MS in Genetics and Molecular Biology</b> Biology Institute, State University of Campinas	Mar. 2014
<b>BS and Licentiate in Biological Sciences</b> School of Life Sciences, Pontifical Catholic University of Campinas	Jan. 2012

### EXPERIENCE

<b>Postdoctoral Fellow <i>and</i> Adjunct Assistant Professor</b> Department of Biology, University of New Mexico	2025 – <i>present</i>
<b>Junior Research Faculty <i>and</i> Cooperating Research Associate</b> University of Hawai'i at Mānoa, and USDA-ARS Pacific Basin Agricultural Research Center	2021 – 25
<b>Research Consultant in Molecular Biology and Bioinformatics</b> Center for Molecular Biology and Genetic Engineering, State University of Campinas	2020 – 21
<b>Visiting Researcher</b> Panama-US Commission for the Eradication and Prevention of the Screwworm	2017 – 18
<b>Research Internship Abroad (BEPE) Fellow</b> Smithsonian Tropical Research Institute	2017 – 18
<b>Graduate Teaching Assistant, Teaching Internship Program (PED) Fellow</b> Institute of Biology, State University of Campinas	2015

**Graduate Teaching Assistant, Teaching Internship Program (PED) Fellow** 2013  
Institute of Biology, State University of Campinas

**Scientific Initiation Fellow** 2008 – 12  
Biology Institute, State University of Campinas

## PUBLICATIONS

In Reverse Chronological Order | [Google Scholar](#) citations

- (14) Paulo DF, Rodrigues RA, Haymer D, Kovalski A, Cáceres C, and Mastrangelo T. **Genetic consequences of domestication and refreshment on colonies of the South American fruit fly.** *Insect Science* (2025): <https://doi.org/10.1111/1744-7917.70007>
- (13) Paulo DF, Nguyen TNM, Ward CM, Corpuz RL, Kauwe AN, Rendon P, Ruano REY, Cardoso AAS, Gouvi G, Fung E, Crisp P, Okada A, Choo A, Stauffer C, Bourtzis K, Sim SB, Baxter SW, and Geib SM. **Functional genomics implicates *ebony* in the black pupae phenotype of tephritid fruit flies.** *Communications Biology* (2025): <https://doi.org/10.1038/s42003-025-07489-y>
- (12) Congrains C, Sim SB, Paulo DF, Corpuz RL, Kauwe AN, Simmonds TJ, Simpson SA, Scheffler BE, and Geib SM. **Chromosome-scale genome of the polyphagous pest *Anastrepha ludens* (Diptera: Tephritidae) provides insights on sex chromosome evolution in *Anastrepha*.** *G3: Genes, Genomes, Genetics* (2024): <https://doi.org/10.1093/g3journal/jkae239>
- (11) Paulo DF, Cha AY, Kauwe AN, Curbelo K, Corpuz RL, Simmonds TJ, Sim SB, and Geib SM. **A unified protocol for CRISPR/Cas9-mediated gene knockout in tephritid fruit flies led to the recreation of white eye and white Puparium phenotypes in the melon fly.** *Journal of Economic Entomology* (2022): <https://doi.org/10.1093/jee/toac166> | Featured in [Entomology Today](#)
- (10) Paulo DF, Junqueira ACM, Arp AP, Vieira AS, Ceballos J, Skoda SR, Pérez-de-León AA, Sagel A, McMillan WO, Scott MJ, Concha C, and Azeredo-Espin AML. **Disruption of the odorant coreceptor *Orco* impairs foraging and host finding behaviors in the New World screwworm fly.** *Scientific Reports* (2021): <https://doi.org/10.1038/s41598-021-90649-x>
- (9) Concha C, Wallbank RW, Hanly JJ, Fenner J, Livraghi L, Rivera ES, Paulo DF, Arias C, Vargas M, Sanjeev M, Morrison C, Tian D, Aguirre P, Ferrara S, Foley J, Pardo-Diaz C, Salazar C, Linares M, Massardo D, Counterman BA, Scott MJ, Jiggins CD, Papa R, Martin A, and McMillan WO. **Interplay between developmental flexibility and determinism in the evolution of mimetic *Heliconius* wing patterns.** *Current Biology* (2019): <https://doi.org/10.1016/j.cub.2019.10.010> | Featured in [Entomology Today](#) and [The Scientist](#)
- (8) Paulo DF, Williamson ME, Arp AP, Li F, Sagel A, Skoda SR, Sanchez-Gallego J, Vasquez M, Quintero G, Pérez de León AA, Belikoff EJ, Azeredo-Espin AML, McMillan WO, Concha C, and Scott MJ. **Specific gene disruption in the major livestock pests *Cochliomyia hominivorax* and *Lucilia cuprina* using CRISPR/Cas9.** *G3* (2019): <https://doi.org/10.1534/g3.119.400544> | Featured in [Insect Genetic Technologies RCN \(discontinued\)](#)
- (7) Gonçalves RM, Mastrangelo T, Rodrigues JC, Paulo DF, Omoto C, Corrêa AS, and Azeredo-Espin AM. **Invasion origin, rapid population expansion, and the lack of genetic structure of cotton bollworm (*Helicoverpa armigera*) in the Americas.** *Ecology and Evolution* (2019): <https://doi.org/10.1002/ece3.5123>
- (6) Junqueira ACM, Ratan A, Acerbi E, Drautz-Moses DI, Premkrishnan BNV, Costea PI, Linz B, Purbojati RW, Paulo DF, Gaultier NE, Subramanian P, Hasan NA, Colwell RR, Bork P, Azeredo-Espin AML, Bryant

DA, and Schuster SC. **The microbiomes of blowflies and houseflies as bacterial transmission reservoirs.** *Scientific reports* (2017): <https://doi.org/10.1038/s41598-017-16353-x> | **Journal Top 100** | **Top 100 in Microbiology** | **Featured in ScienceDaily.**

- (5) Paulo DF, Azeredo-Espin AML, Canesin LEC, Vicentini R, and Junqueira ACM. **Identification and characterization of microRNAs in the screwworm flies *Cochliomyia hominivorax* and *Cochliomyia macellaria* (Diptera: Calliphoridae).** *Insect molecular biology* (2017): <https://doi.org/10.1111/imb.12270>
- (4) Junqueira ACM, Azeredo-Espin AML, Paulo DF, Marinho MAT, Tomsho LP, Drautz-Moses DI, Purbojati RW, Ratan A, and Schuster SC. **Large-scale mitogenomics enables insights into *Schizophora* (Diptera) radiation and population diversity.** *Scientific reports* (2016): <https://doi.org/10.1038/srep21762> | **Featured in Journal of UNICAMP & FAPESP blog**
- (3) Grella MD, Savino AG, Paulo DF, Mendes FM, Azeredo-Espin AML, Queiroz MMC, Thyssen PJ, and Linhares AX. **Phenotypic polymorphism of *Chrysomya albiceps* (Wiedemann) (Diptera: Calliphoridae) may lead to species misidentification.** *Acta tropica* (2015): <https://doi.org/10.1016/j.actatropica.2014.09.011>
- (2) Mastrangelo T, Paulo DF, Bergamo LW, Morais EGF, Silva M, Bezerra-Silva G, and Azeredo-Espin AML. **Detection and genetic diversity of a Heliiothine invader (Lepidoptera: Noctuidae) from North and Northeast of Brazil.** *Journal of Economic Entomology* (2014): <https://doi.org/10.1603/EC13403>
- (1) Marinho MAT, Junqueira ACM, Paulo DF, Esposito MC, Villet MH, and Azeredo-Espin AML. **Molecular phylogenetics of Oestroidea (Diptera: Calyptratae) with emphasis on Calliphoridae: Insights into the inter-familial relationships and additional evidence for paraphyly among blowflies.** *Molecular Phylogenetics and Evolution* (2012): <https://doi.org/10.1016/j.ympev.2012.08.007>

## BOOKS and CHAPTERS

In Reverse Chronological Order | [Google Scholar](#) citations

- (1) Paulo DF, Williamson ME, and Scott MJ. **CRISPR/Cas9 genome editing in the New World screwworm and Australian sheep blowfly.** *In Applications of Genome Modulation and Editing* (pp. 173–201). *Methods in Molecular Biology* 2495, New York, NY: Springer US (2022): [https://doi.org/10.1007/978-1-0716-2301-5\\_10](https://doi.org/10.1007/978-1-0716-2301-5_10)

## MANUSCRIPTS in PREPARATION

- (1) Paulo DF and Geib SM. **Advancing sterile insect technique for the New World screwworm: The case for CRISPR-engineered genetic sexing strains.** *Invited forum article; Journal of Economic Entomology (New World Screwworm Special Collection).*
- (2) Paulo DF, et al. **A chromosome-level reference genome assembly and annotation for the Old World screwworm fly *Chrysomya bezziana* (Diptera: Calliphoridae).** *Research article; Genome Biology and Evolution.*

## EXTERNAL GRANTS and FELLOWSHIPS

<b>Doctorate Fellowship</b> (\$65,461) <sup>a</sup> São Paulo Research Foundation (FAPESP #2014/15042-3)	2014 – 19
<b>Research Internships Abroad Fellowship</b> (\$26,497) <sup>a</sup> São Paulo Research Foundation (FAPESP #2017/05432-7)	2017 – 18

<b>Masters Fellowship</b> (\$11,336) <sup>a</sup> São Paulo Research Foundation (FAPESP #2012/06272-0)	2013 – 14
<b>Scientific Initiation Fellowship</b> (\$4,924) <sup>a</sup> São Paulo Research Foundation (FAPESP #2010/09961-5)	2010 – 12

### AWARDS *and* DISTINCTIONS

<b>Oral Presentation Competition, Postdoc Category</b> (3rd place, \$50) Hawaiian Entomological Society Student and Early Career Symposium	2022
<b>STRI Short-term Fellowship Award</b> (\$5,000) Smithsonian Tropical Research Institute	2017
<b>Teaching Internship Program (PED – C)</b> (\$694) <sup>a</sup> State University of Campinas	2015
<b>Teaching Internship Program (PED – C)</b> (\$1,165) <sup>a</sup> State University of Campinas	2013

a. Rates calculated using the *Treasury Reporting Rates of Exchange* for the year (REAL to USD)

### TEACHING EXPERIENCE

#### Instructor

- **Introduction to CRISPR for ecology and evolution studies.** Physalia-courses Training Centre.
  - **3<sup>rd</sup> ed.** (remote) Oct. 13 – 16, 2025
  - **2<sup>nd</sup> ed.** (remote) Oct. 14 – 18, 2024
  - **1<sup>st</sup> ed.** (remote) Oct. 9 – 12, 2023
- **Principles of molecular phylogenetics.** 43rd Biological Sciences Study Week (MC01), PUC-Campinas, School of Life Sciences. Nov. 10 – 11, 2014.
- **Investigating the diversity of blowflies with DNA barcoding.** Lab course in Physiological and Molecular Genetics (BG380), UNICAMP, Department of Biology. Spring – Summer 2013.

#### Guest lecturer

- **Genetic-based biocontrol of pest insects.** Insect Systematics and Ecology (BIO494 / CBES694), UH Hilo, Department of Biology & Tropical Conservation Biology and Environmental Science graduate program. Nov. 2024.
- **Trophic interactions of insects: Explorative relationships.** Insect Systematics and Ecology (BIO494 / CBES694), UH Hilo, Department of Biology & Tropical Conservation Biology and Environmental Science graduate program. Nov. 2024.
- **Genetic engineering.** Genetics (BIO376), UH Hilo, Department of Biology. Apr. 2024.
- **Gene regulation in prokaryotes.** Genetics (BIO376), UH Hilo, Department of Biology. May 2023.
- **Introduction to small regulatory RNAs.** Physiological and Molecular Genetics (BG520), UNICAMP, Department of Biology. Mar. 2016.
- **DNA sequencing analysis.** Physiological and Molecular Genetics (BG520), UNICAMP, Department of Biology. 2015.
- **Introduction to mitochondrial genomics.** Physiological and Molecular Genetics (BG520), UNICAMP, Department of Biology. 2015.
- **DNA and RNA sequencing.** Physiological and Molecular Genetics (BG380), UNICAMP, Department of Biology. 2013.

## Teaching Assistant

- Physiological and Molecular Genetics (BG520), UNICAMP, Department of Biology. 2015
- Physiological and Molecular Genetics (BG360), UNICAMP, Department of Biology. 2013

## MENTORSHIP EXPERIENCE

### Co-Mentorship of High School Student

Taarini Godbole (Waiakea High School) 2021 – 22  
 Project: Efficiency of CRISPR/Cas9-mediated mutagenesis in the *w<sup>p</sup>* gene of the melon fly  
 Distinction: 1st place in District Science & Engineering Fair (Cellular and Molecular Biology)

### Co-Supervision of Technician

Alex Cha (USDA-ARS Pacific Basin Agricultural Research Center) 2021 – 22  
 Project: CRISPR/Cas9 gene KO in tephritid fruit flies  
 Distinction: Authorship in scientific publication ([Paulo et al. 2022](#))

### Co-Supervision of Graduate Student

Rogério Gonçalves (State University of Campinas), MS and PhD 2018 – 20  
 Project: Functional transcriptome analyses of Screwworm antennae

### Co-Supervision of Undergraduate Student

Felipe Mendes (State University of Campinas), BS in Biology 2014 – 15  
 Project: Molecular identification of a forensically important blowflies  
 Distinction: Authorship in scientific publication ([Grella et al. 2015](#))

## SELECTED SCIENTIFIC COMMUNICATIONS

### Invited Seminars

- (9) Paulo DF. **The Good, the Bad, and the Ugly: Mysterious tales of parasitic flies.** UNM Department of Biology Seminar Series (Albuquerque, NM, USA, Mar. 2026).
- (8) Paulo DF, Sim SB, and Geib SM. **A Link to the Past: Using CRISPR/Cas9 to Alter Sex Ratios Outside of the Sex Determination Pathway.** Gordon Research Conference on Genetic Biocontrol (Barcelona, Spain, May 2024).
- (7) Paulo DF, Sim SB, and Geib SM. **A Study in Ebony: Functional Genomics Evidence Linking the ebony Gene to the Black Pupae Phenotype in Tephritid Fruit Flies.** Entomological Society of America Annual Meeting (National Harbor, MD, USA, Nov. 2023).
- (6) Paulo DF, Sim SB, and Geib SM. **A Unified Protocol for CRISPR/Cas9-Mediated Gene Disruption in Non-model Tephritid Fruit Flies.** Entomological Society of America Pacific Branch Meeting (Seattle, UW, USA, Apr. 2023).
- (5) Paulo DF. **Here Today, Gone Tomorrow: Supporting Insect Pest Management in the Genome-editing Era.** USDA-ARS-PBARC Seminar Series (Remote, Jul. 2021).
- (4) Paulo DF. **Unlocking the Olfactory Routes of the Screwworm Oviposition Behavior.** Entomological Society of America Pacific Branch Meeting (Remote, Apr. 2021).
- (3) Paulo DF, Arp AP, Sagel A, Skoda SR, Pérez de León AA, Azeredo-Espin AML, McMillan WO, Scott MJ, and Concha C. **Evaluation of an Early Lethal Sexing Strain of the New World Screwworm Fly, *Cochliomyia hominivorax* (Diptera: Calliphoridae) and Development of CRISPR/Cas9 Genome-editing Technology for Functional Genomics.** Third Research Coordination Meeting on Comparing

Rearing Efficiency and Competitiveness of Sterile Male Strains Produced by Genetic, Transgenic or Symbiont-based Technologies (Bangkok, Thailand, Jun. 2018).

- (1, 2) Paulo DF, Concha C, Arp AP, Scott MJ, and McMillan OW. **How to Make a Pest: Unlocking the New World Screwworm Fly Genome with CRISPR.** (1) Smithsonian Tropical Research Institute Public Talk Program (Panama, Republic of Panama, May 2018), and (2) State University of Campinas Graduate Students Meeting in Genetics and Molecular Biology (Campinas, SP, Brazil, Jan. 2019).

### Selected Oral Presentations

- (3) Paulo DF, Sim SB, and Geib SM. **A Study in Ebony: Functional Genomics Evidence Linking the ebony Gene to the Black Pupae Phenotype in Tephritid Fruit Flies.** XXVII International Congress of Entomology (Kyoto, Japan, Aug. 2024).
- (2) Paulo DF, Sheina SB, and Geib SM. **A Study in Ebony: Molecular Evidence Linking the ebony Gene to the Black Pupae Phenotype in True Fruit Flies.** 13th Annual Tropical Conservation Biology and Environmental Science (TCBES) Symposium (Hilo, HI, USA, Mar. 2023).
- (1) Paulo DF, and Geib SM. **How to Make a Mutant Fruit Fly: Using Modern Functional Genomics to Recreate Classical Mutant Phenotypes in Non-model Tephritids of High Agricultural Relevance.** Hawaiian Entomological Society Student and Early Career Symposium (Remote, Mar. 2022).

### Selected Poster Communications

- (5) Paulo DF, Junqueira ACM, and Azeredo-Espin AML. **De novo Transcriptome Assembly of the Screwworm Fly *Cochliomyia hominivorax* (Diptera: Calliphoridae): Perspectives for the Identification of Major Chemosensory Genes and Potential microRNAs Targets.** XXV International Congress of Entomology (Orlando, FL, USA, Sep. 2016).
- (4) Paulo DF, Junqueira ACM, Vicentini R, and Azeredo-Espin AML. **Identification of microRNAs in *Cochliomyia hominivorax* and *Cochliomyia macellaria*: Implications for Parasitism Studies in Calliphoridae (Diptera: Brachycera).** 8th International Congress of Dipterology (Potsdam, Germany, Aug. 2014).
- (3) Paulo DF, Junqueira ACM, Vicentini R, and Azeredo-Espin AML. **Expression and Evolutionary Analysis of microRNAs in *Cochliomyia hominivorax* and *Cochliomyia macellaria*: Implications for Parasitism Studies in Calliphoridae (Diptera: Brachycera).** Entomological Society of America Annual Meeting (Austin, TX, USA, Nov. 2013).
- (2) Paulo DF, Junqueira ACM, Vicentini R, and Azeredo-Espin AML. **Deep Sequencing of *Cochliomyia hominivorax* and *Cochliomyia macellaria* Small RNAs: Identification and Comparison of microRNAs.** 59th Brazilian Congress of Genetics (Águas de Lindóia, SP, Brazil, Sep. 2013).
- (1) Paulo DF, Azeredo-Espin, and Junqueira ACM. **Mitogenomics of the Schizophora Clade (Diptera: Brachycera): Challenges, Techniques and Perspectives for Molecular Phylogeny.** 57th Brazilian Congress of Genetics (Águas de Lindóia, SP, Brazil, Sep. 2011).

### Other Relevant Work

- (3) Junqueira ACM, Paulo DF, Rodrigues R, Purbojati R, Drautz-Moses D, Ratan A, Azeredo-Espin AML, and Schuster S. **Non-model Fly Genomics: from Short Reads to Genomes, from Microbes to Chromosomes.** Entomological Society of America Annual Meeting (Vancouver, BC, Canada, Nov. 2018).

- (2) Arp AP, Paulo DF, Concha C, and Scott MJ. **CRISPR-Cas9 Knockout of *transformer* in *Cochliomyia hominivorax* Causes Masculinization of XX Flies**. Entomological Society of America Annual Meeting (Vancouver, BC, Canada, Nov. 2018).
- (1) Junqueira ACM, Paulo DF, and Azeredo-Espin. **Evaluation of Secondary Structure of 16S rRNA for Molecular Phylogeny of Schizophora Clade (Diptera: Brachycera)**. XXIV International Congress of Entomology (Daegu, Japan, Aug. 2012).

## SCIENTIFIC COMMUNITY INVOLVEMENTS *and* SERVICE

### Events

- **Judge**: The Hawaii District Science Fair (Waiākea High School, Hilo, HI, USA, Mar. 2025).
- **Organizer Staff**: Advanced Topics in Genomics and Cell Biology (ATCG) (State University of Campinas, Campinas, SP, Brazil, May 2013).

### Memberships

Entomological Society of America ([ESA](#); member 2023 – *present*); Genetic Society of America ([GSA](#); member 2023 – *present*); Society for Molecular Biology and Evolution ([SMBE](#); member 2025 – *present*).

### Invited Peer Review

Agrociencia Uruguay ([ISSN:2730-5066](#)), Frontiers in Genome Editing ([ISSN:2673-3439](#)), Heredity ([ISSN:1365-2540](#)), Insect Molecular Biology ([ISSN:1365-2583](#)), Insect Science ([ISSN:1744-7917](#)), Journal of Economic Entomology ([ISSN:0022-0493](#)), Molecular Biology and Evolution ([ISSN:1537-1719](#)), Parasites & Vectors ([ISSN:1756-3305](#)), Pest Management Science ([ISSN:1526-4998](#)), Revista Brasileira de Entomologia ([ISSN:1806-9665](#)), and Scientific Reports ([ISSN:2045-2322](#)).