

Federico López-Osorio

BIOINFORMATICS · GENOMICS

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Education

University of Vermont

PH.D. IN BIOLOGY

Burlington, Vermont, USA

2010 - 2016

- Dissertation: Phylogenetics and molecular evolution of highly eusocial wasps

Universidad Industrial de Santander

B.SC. IN BIOLOGY

Santander, Colombia

2009

- Thesis: A phylogenetic approach to conserving Amazonian biodiversity

Experience

Queen Mary University of London

MARIE SKŁODOWSKA-CURIE ACTIONS FELLOW (SUPERVISOR: DR. YANNICK WURM)

London, UK

2019 – 2022

Queen Mary University of London

POSTDOCTORAL RESEARCHER (SUPERVISOR: DR. YANNICK WURM)

London, UK

2018 – 2019

American Museum of Natural History

RESEARCH ASSOCIATE

New York, NY, USA

2018 – present

American Museum of Natural History

GERSTNER SCHOLARS PROGRAM (BIOLOGY) FELLOW (SUPERVISOR: DR. JAMES M. CARPENTER)

New York, NY, USA

2016 – 2018

Publications

Expression of subunits of an insecticide target receptor varies across tissues, life stages, castes, and species of social bees

Journal article

MOLECULAR ECOLOGY 32, NO. 5: 1034–1044. [HTTPS://DOI.ORG/10.1111/MEC.16811](https://doi.org/10.1111/MEC.16811)

2023

- Witwicka, A., López-Osorio, F., Patterson, V., Wurm, Y.

Recurring adaptive introgression of a supergene variant that determines social organization

Journal article

NATURE COMMUNICATIONS 13, NO. 1: 1180. [HTTPS://DOI.ORG/10.1038/s41467-022-28806-7](https://doi.org/10.1038/s41467-022-28806-7)

2022

- Stolle, E., Pracana, R., López-Osorio, F., Priebe, M., Hernández, G. L., Castillo-Carrillo, C., Arias, M. C., Paris, C. V., Bollazzi, M., Priyam, A., Wurm, Y.

Emery's rule

Book chapter

IN: STARR, C. K. (ED.). ENCYCLOPEDIA OF SOCIAL INSECTS, PP. 365–368.

2021

[HTTPS://DOI.ORG/10.1007/978-3-030-28102-1_42](https://doi.org/10.1007/978-3-030-28102-1_42)

- López-Osorio, F.

Healthy pollinators: Evaluating pesticides with molecular medicine approaches

Journal article

TRENDS IN ECOLOGY & EVOLUTION 35, NO. 5: 380–383. [HTTPS://DOI.ORG/10.1016/J.TREE.2019.12.012](https://doi.org/10.1016/j.tree.2019.12.012)

2020

- López-Osorio, F. and Wurm, Y.

Convergent reversion to single mating in a wasp social parasite

Journal article

THE AMERICAN NATURALIST 189, NO. 6: E138–151. [HTTPS://DOI.ORG/10.1086/691405](https://doi.org/10.1086/691405)

2017

- Loope, K.J., López-Osorio, F., Dvořák, L.

Phylogenomic analysis of yellowjackets and hornets (Hymenoptera: Vespidae, Vespinae)

Journal article

MOLECULAR PHYLOGENETICS AND EVOLUTION 107: 10–15.

2017

[HTTPS://DOI.ORG/10.1016/J.YMPEV.2016.10.006](https://doi.org/10.1016/j.ympev.2016.10.006)

- López-Osorio, F., Pickett, K.M., Carpenter, J.M., Ballif, B.A., Agnarsson, I.

- Phylogeny, landmark analysis and the use of wing venation to study the evolution of social wasps (Hymenoptera: Vespidae, Vespinae)** *Journal article*
 CLADISTICS 32, NO. 4: 406–425. [HTTPS://DOI.ORG/10.1111/CLA.12138](https://doi.org/10.1111/cla.12138) 2016
 • Perrard, A., **López-Orsorio, F.**, Carpenter, J. M.
- Phylogenetic tests reject Emery’s rule in the evolution of social parasitism in yellowjackets and hornets (Hymenoptera: Vespidae, Vespinae)** *Journal article*
 ROYAL SOCIETY OPEN SCIENCE 2, NO. 9: 150159. [HTTPS://DOI.ORG/10.1098/RSOS.150159](https://doi.org/10.1098/rsos.150159) 2015
 • **López-Orsorio, F.**, Perrard, A., Pickett, K. M., Carpenter, J. M., Ballif, B. A., and Agnarsson, I.
- Phylogenetic relationships of yellowjackets inferred from nine loci (Hymenoptera: Vespidae, Vespinae, *Vespula* and *Dolichovespula*)** *Journal article*
 MOLECULAR PHYLOGENETICS AND EVOLUTION 73: 190–201. [HTTPS://DOI.ORG/10.1016/J.YMPEV.2014.01.007](https://doi.org/10.1016/j.ympev.2014.01.007) 2014
 • **López-Orsorio, F.**, Pickett, K. M., Carpenter, J. M., Ballif, B. A., and Agnarsson, I.
- A phylogenetic approach to conserving Amazonian biodiversity** *Journal article*
 CONSERVATION BIOLOGY 24, NO. 5: 1359–1366. [HTTPS://DOI.ORG/10.1111/J.1523-1739.2010.01482.X](https://doi.org/10.1111/j.1523-1739.2010.01482.x) 2010
 • **López-Orsorio, F.** and Miranda-Esquivel, D. R.
- What is PACT really?** *Journal article*
 CLADISTICS 24, NO. 5: 813–824. [HTTPS://DOI.ORG/10.1111/J.1096-0031.2008.00203.X](https://doi.org/10.1111/j.1096-0031.2008.00203.x) 2008
 • Arias, J. S., Garzón-Orduña, I. J., **López-Orsorio, F.**, Parada-Vargas, E. J., and Miranda-Esquivel, D. R.

🎓 Grants, Fellowships and Awards

- BBSRC BB/T015683/1 – Researcher Co-Investigator: Transcriptomic diagnostics for identifying interactive effects of pesticides, food deficiency, and heat stress on bee health (£548,466)** *London, UK*
 QUEEN MARY UNIVERSITY OF LONDON 2020
- Marie Skłodowska-Curie Actions, Individual Fellowship (€224,933)** *London, UK*
 QUEEN MARY UNIVERSITY OF LONDON 2019 - 2022
- Gerstner Scholars Program (Biology), Postdoctoral Fellowship (\$110,818)** *New York, NY, USA*
 AMERICAN MUSEUM OF NATURAL HISTORY 2016 - 2018
- The Willi Hennig Award - best oral presentation by a student (\$1,000)** *New York, NY, USA*
 ANNUAL MEETING OF THE WILLI HENNIG SOCIETY 2015
- Graduate Student Summer Research Fellowship (\$2,000)** *Burlington, VT, USA*
 UNIVERSITY OF VERMONT 2015
- Student Competition for the President’s Prize - oral presentation, 2nd place** *Portland, OR, USA*
 ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF AMERICA 2014
- Ronald Suiter Prize (\$1,000)** *Burlington, VT, USA*
 UNIVERSITY OF VERMONT 2013
- Mini Grant (\$300)** *Burlington, VT, USA*
 UNIVERSITY OF VERMONT 2013

🎤 Presentations

- Comparative genomics of social parasitism in wasps** *London, UK*
 BIOLOGY SEMINAR, QUEEN MARY UNIVERSITY OF LONDON 2020
- Sociogenomics of social parasitism in wasps (Hymenoptera, Vespidae)** *Montpellier, France*
 II JOINT CONGRESS ON EVOLUTIONARY BIOLOGY 2018
- Comparative transcriptomics and the evolution of social parasitism in wasps** *New York, NY, USA*
 COMPARATIVE BIOLOGY SEMINAR, AMERICAN MUSEUM OF NATURAL HISTORY 2017
- Phylogenetic tests reject Emery’s rule in the evolution of social parasitism in yellowjackets and hornets (Hymenoptera: Vespidae, Vespinae)** *New York, NY, USA*
 HENNIG XXXIV, HENNIG SOCIETY 2015
- Phylogenomic analysis of yellowjackets and hornets (Hymenoptera, Vespidae)** *Portland, OR, USA*
 ENTOMOLOGY 2014, ENTOMOLOGICAL SOCIETY OF AMERICA 2014
- Phylogenomic analysis of yellowjackets and hornets (Hymenoptera, Vespidae)** *Raleigh, NC, USA*
 EVOLUTION 2014, SOCIETY FOR THE STUDY OF EVOLUTION 2014

**Phylogenetic relationships of yellowjackets inferred from nine loci
(Hymenoptera: Vespidae, Vespinae, *Vespula* and *Dolichovespula*)**

Austin, TX, USA

ENTOMOLOGY 2013, ENTOMOLOGICAL SOCIETY OF AMERICA

2013

**Molecular phylogenetics of hornets and yellowjackets (Hymenoptera:
Vespidae, Vespinae): a preliminary study**

Riverside, CA, USA

HENNIG XXXI, HENNIG SOCIETY

2012

Conserving Amazonian biodiversity: a phylogenetic approach

Tucumán, Argentina

HENNIG XXVII, HENNIG SOCIETY

2008

Teaching

Field Zoology (BIOL 209)

Burlington, VT, USA

UNIVERSITY OF VERMONT

2012, 2014

Graduate Teaching Assistant

Speciation and Phylogenetics (BIOL 270A)

Burlington, VT, USA

UNIVERSITY OF VERMONT

2013

Graduate Teaching Assistant

Ecology and Evolution (BCOR 102)






Burlington, VT, USA

UNIVERSITY OF VERMONT

2011, 2015

Graduate Teaching Assistant

Skills

-  **Bioinformatics** Analysis of high-throughput genomic data | Quality control of genome-scale assays | Genome and transcriptome assembly, including non-model organisms | Structural and functional genome annotation | Orthology inference and phylogenomics | Differential gene expression and transcript usage (RNA-seq) | Variant calling and analysis | Metagenome assembly and taxonomic profiling
-  **Data Analysis** Data visualisation (e.g., ggplot2) | Linear models (e.g., GLM, GLMM) | Data normalisation and transformation | Unsupervised learning (e.g., PCA) | Experimental design | Effective reporting with aesthetic appeal
-  **Programming** R, Tidyverse, Shiny | Shell scripting | Unix systems, high-performance computing | git, GitHub | LaTeX, R Markdown, Quarto | Workflow management (e.g., Snakemake) | Package management (e.g., Conda) | Python
-  **Laboratory** Isolation and purification of DNA and RNA | Polymerase chain reaction (PCR) | Primer design for PCR | PCR cleanup | Cycle sequencing | DNA and RNA sample quality control (TapeStation, Bioanalyzer) | Electrophoresis
-  **Languages** English (fluent) | Spanish (native)

Reviewer

Molecular Biology and Evolution
Evolutionary Ecology
Zoological Journal of the Linnean Society
Acta Oecologica
Journal of Asia-Pacific Entomology

Memberships

Society for Molecular Biology and Evolution
Society for the Study of Evolution
International Union for the Study of Social Insects, North-West European Section