

Francisco Xavier Castellanos Insuasti

I am a **Master of Science in Biology student** in the Ray Lab, skilled in fieldwork, cellular and molecular biology, and bioinformatics. My research encompasses studies from the evolution of Transposable Elements and the innate immune response of **bats** to the Ecology, behavior and habitat occupancy of **large mammals** such as Andean bears, tapirs and Andean foxes in Ecuador.



EDUCATION

Present
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2021



MS Student, Biology

Texas Tech University. The Ray Lab.

📍 Lubbock, USA

- Thesis: A Comparative Genomics Approach to Unravel the Evolutionary Dynamics of Transposable Elements and Innate Immune Genes in Chiroptera
- Graduation date: Fall 2023

2020



BS Genetics

Laboratorio de Genética Evolutiva,
Universidad Nacional de Misiones

📍 Posadas, Argentina

- Thesis: Cytogenetic and molecular studies in some species of the Genus *Myotis* (Chiroptera: Vespertilionidae: Myotinae) in Northern Argentina.



RESEARCH EXPERIENCE

Present
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2021



Collaborator

[The Ray Lab](#), Texas Tech University

📍 Lubbock, USA

- RAPID: Immunological adaptations in bats to moderate the effect of coronavirus infection.
- RoL: FELS: EAGER: Collaborative Research: Genomics of exceptions to scaling of longevity to body size.

Present
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2020



Associated Researcher

[INABIO](#)

📍 Quito, Ecuador

- Employed novel bioinformatic methods to understand how mammals make use of their natural habitat and what resources impact on how they move across their home ranges.

Present
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2015



Research Assistant

[Andean Bear Foundation](#)

📍 Quito, Ecuador

- As part of the Large Mammals Project in Parque Nacional Cayambe Coca, I assisted in ecotourism projects and tracking of mammals.
- Our Foundation works with INABIO on several projects related to home range estimation of mammals habitats and behavior patterns using GPS data.

CONTACT

✉ xacfran@gmail.com

🌐 github.io/digital-resume

🐙 github.com/Xacfran

in linkedin.com/frcastel

🏠 Lubbock, Texas

📞 +1 (904) 719-2072

TECH SKILLS

R

Markdown

Bash

Python

My experience includes but is not limited to:

- Bioinformatics script development
- Genome annotation
- Transposable element characterization
- Gene and protein structure prediction
- Home range estimation

LAB SKILLS

Cytogenetics and cellular biology:

- C-banding
- NOR
- DAPI/CMA₃
- FISH
- PCR
- Human cell cultures

Made in R w/ [pagedown](#).
Source code: [Github repo](#).
Last updated on 2023-09-06.



PROFESSIONAL EXPERIENCE

Present
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2023

Regional Chair

BatIK

- As a newly appointed Regional Chair for Ecuador I intend to bridge connections between one of the most important worldwide bat consortia and institutions in my home country that have not collaborated with genome sequencing initiatives due to lack of funding.
- My efforts will expand the consortium's reach and impact in one of the most underrepresented regions with regard to genome-related projects.

2021

Thesis Evaluating Committee

Universidad Distrital Francisco José de Caldas

📍 Bogotá, Colombia

- Undergraduate Thesis: "Biological knowledge status of the subfamily Stenodermatinae (Gervais, 1856): a cytogenetic revision within an evolutionary framework"

2018

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2015

Field Assistant

Laboratorio de Genética Evolutiva, Universidad Nacional de Misiones

📍 Posadas, Argentina

- I was part of collection campaigns with the goal of obtaining biological samples from bats for several genetic and ecological projects.



INTERNSHIPS

December
2022

A cytogenetic and genomic approach to unravel phylogenetic discrepancies in a bat genus

Integrative Biology Department, University of California, Berkeley

📍 Berkeley, USA

February
2020

Karyological analyses as a tool for clinical diagnosis of human hereditary diseases

Hospital Carlos Andrade Marin, Genetics and Molecular Unit

📍 Quito, Ecuador

2019

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2018

Herpetology data base enhancement project

Laboratorio de Genética Evolutiva, Universidad Nacional de Misiones

📍 Posadas, Argentina



TEACHING EXPERIENCE

2023

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2022

BIOL 1404 (BIOL II)

Department of Biological Sciences, Texas Tech University

📍 Lubbock, USA

- Laboratory Teaching Assistant.
- Lab continuation for BIOL1403 for Biology Major students.
- Dissection labs are performed besides an independent investigation project in which students present a scientific article draft as a final project.

2022




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2021

BIOL 1403 (BIOL I)

Department of Biological Sciences, Texas Tech University


📍 Lubbock, USA

- Laboratory Teaching Assistant.
- Lab course designed to develop scientific skills in Biology Major students.
- Guided students to perform microscopy, spectrophotometry, and fermentation experiments.

- Summer 2022 ● **BIOL 3416 (Genetics)**
Department of Biological Sciences, Texas Tech University  Lubbock, USA
- Laboratory Teaching Assistant.
 - Topics covered include Mendelian genetics, fly crosses to replicate Thomas Morgan's experiments, and Chi-square as a means to understand statistical significance of expected and observed breeding results.
- Fall 2023 ● **Genomes and Genomes Evolution**
Department of Biological Sciences, Texas Tech University  Lubbock, USA
- Teaching Assistant
 - Guided graduate students through exercises performed through the Unix command line to analyze genome assemblies via several tools.
- Spring 2021 ● **Introduction to Telemetry and Ecology of Large Mammals**
Andean Bear Foundation  Online
- Basic level introduction to R language, basic statistics and data visualization.
 - Intermediate-level students were introduced to home range estimation methods using the adehabitat package.
 - Advanced students learned to visualize animal movement with the movevis package and to estimate home ranges using the Convex Hull method with T-LoCoH.



PEDAGOGICAL TRAINING

- Fall 2022 ● **Biology Teacher Scholar Program**
Department of Biological Sciences, Texas Tech University  Lubbock, USA
- Completed a comprehensive teaching professional development program
 - Participated in intensive, 2-day bootcamp on topics including: active learning, growth mindset, and lesson planning
 - Participated in monthly mentoring sessions
 - Completed a peer teaching observation and reflection



PUBLICATIONS

- 2023 ● **A SINE-based method to reconstruct concordant phylogenies in Chiroptera (In preparation)**
Castellanos, F. X., Paulat, N., Hughes, G., and Ray, D.
- 2023 ● **Home range and utilization of landscape of the Andean bear *Tremarctos ornatus* in the Ecuadorian Andes (In preparation)**
Castellanos, F. X., Jackson, D., Kays, R., Van Gestel, N., Brito, J. and Castellanos, A
- 2023 ● **The search behavior of terrestrial mammals (Submitted to Nature Communications)**
Michael J. Noonan, Ricardo Martinez-Garcia, Christen H. Fleming, ... Castellanos, F. X. .. , William F. Fagan, and Justin M. Calabrese.(2023). [Preprint]: <https://doi.org/10.1101/2022.12.31.521874>
- 2023 ● **The evolution of antimicrobial peptides in Chiroptera**
Castellanos, F. X., Moreno-Santillan, D., Hughes, G.M., ..., Ray, D.A. and Dávalos, L.M. The evolution of antimicrobial peptides in Chiroptera. *Frontiers in Immunology* 14. <https://doi.org/10.3389/fimmu.2023.1250229>

- 2023 ● **New species of the Spiny Mouse genus *Neacomys* (Cricetidae, Sigmodontinae) from northwestern Ecuador**
Tinoco, N., Koch, C., Colmenares J., **Castellanos, F. X.**, and Brito, J. (2023). New species of spiny mouse genus of the *Neacomys* (Cricetidae, Sigmodontinae) from northwestern Ecuador. Zookeys 1175:187-221. <https://doi.org/10.3897/zookeys.1175.106113>
- 2021 ● **A pilot study on the home range and movement patterns of the Andean Fox *Lycalopex culpaeus* (Molina, 1782) in Cotopaxi National Park, Ecuador**
Castellanos, A., **Castellanos, F. X.**, Kays, R. and Brito, J. (2021). A pilot study on the home range and movement patterns of the Andean Fox *Lycalopex culpaeus* (Molina, 1782) in Cotopaxi National Park, Ecuador. Mammalia 86(1), 22-26. <https://doi.org/10.1515/mammalia-2020-0195>
- 2020 ● ***Tapirus pinchaque* in Western Ecuador**
Castellanos, A., Brito, J. and **Castellanos, F. X.** (2021). Tapirus pinchaque in Western Ecuador. Museum of Zoologic Research IASA, Technical Bulletin, Zoologic Series 16:1-4. Online access: <https://journal.espe.edu.ec/ojs/index.php/revista-serie-zoologica/article/view/1629>
- 2020 ● **First report of Canine distemper in the Andean Fox (*Lycalopex culpaeus*) in Ecuador**
Castellanos, A., Brito, J. and **Castellanos, F. X.** (2022). First report of Canine distemper in the Andean Fox (*Lycalopex culpaeus*) in Ecuador. Museum of Zoologic Research IASA, Technical Bulletin, Zoologic Series 16:1-4. Online access: <https://journal.espe.edu.ec/ojs/index.php/revista-serie-zoologica/article/view/1628>
- 2019 ● ***Glyphonycteris*, O. Thomas, 1896 (Chiroptera: Phyllostomidae: Glyphonycterinae), a new genus of bats for Argentina, with commentary on its karyotype**
Sánchez, M.S., Labaroni C.A., **Castellanos, F. X.** and Baldo, D.J. *Glyphonycteris*, O. Thomas, 1896 (Chiroptera: Phyllostomidae: Glyphonycterinae), a new genus of bats for Argentina, with commentary on its karyotype. Mastozoología Neotropical, 26(2):420-429. <https://doi.org/10.31687/saremMN.19.26.2.0.12>
- 2019 ● ***Panthera onca***
Castellanos, A., **Castellanos, F. X.**, and Vallejo, A.F. 2019. Panthera onca In: Brito, J., Camacho, M. A., Romero, V. Vallejo, A. F. (eds). Mamíferos del Ecuador. Version 2018.0. Zoology Museum, Pontificia Universidad Católica del Ecuador. Online access: <https://bioweb.bio/faunaweb/mammaliaweb/FichaEspecie/Panthera%20onca>
- 2019 ● ***Artibeus lituratus***
Sánchez, Mariano S., **Castellanos, F. X.**, Sandoval, María Leonor (2019). *Artibeus lituratus*. (2019). Categorization of mammals in Argentina according to their risk of extinction. Argentine mammal's Red List. Digital version: <https://cma.sarem.org.ar/es/especie-nativa/artibeus-lituratus>
- 2019 ● ***Carollia perspicillata***
Castellanos, F. X., Sánchez, Mariano S., Sandoval, María Leonor (2019). *Carollia perspicillata*. (2019). Categorization of mammals in Argentina according to their risk of extinction. Argentine mammal's Red List. Digital version: <https://cma.sarem.org.ar/es/especie-nativa/carollia-perspicillata>



CONFERENCES & TALKS

- June 2023 ● **deAMplifying the Immune Response? Antimicrobial Peptides Evolution in Chiroptera**
Oral presentation: Evolution. Albuquerque NM, USA.

- April 2023

● **deAMPlifying the Immune Response? Antimicrobial Peptides Evolution in Chiroptera**
Oral presentation: 11th Texas Tech Annual Biological Sciences Symposium. Best Oral Presentation. Lubbock TX, USA.
- August 2022

● **deAMPlifying the Immune Response: Antimicrobial Peptides Evolution in Chiroptera**
Poster presentation: 19th IBCR - 50th NASBR. [\[Abstract PDF\]](#). Austin TX, USA.
- April 2021

● **De lo básico a lo complejo: ¿Qué causa el Síndrome de Prader Willi?**
Invited speaker: From the basics to the complex: What causes Prader-Willi Syndrome? Fundación Prader-Willi Ecuador. Online.
- October 2018

● **Chromosomal studies in some species of the genus *Myotis* (Chiroptera: Vespertilionidae) from Northern Argentina.**
Poster presentation: XXXI Argentine Conference of Mastozoology. [\[Abstract PDF\]](#). La Rioja, Argentina.



AWARDS

- 2023

● **Bat Biology Foundation Award**
The Ray Lab, Texas Tech University 📍 Lubbock, USA
- 2023

● **Short summer Research Award**
The Ray Lab, Texas Tech University 📍 Lubbock, USA
- 2022

● **General Fellowships for New and Continuing Graduate Students**
The Ray Lab, Texas Tech University 📍 Lubbock, USA
- 2022

● **Study Abroad Competitive Scholarship**
The Ray Lab, Texas Tech University 📍 Lubbock, USA
- 2022

● **TTU Biology Teacher-Scholars Program**
Department of Biological Sciences, Texas Tech University 📍 Lubbock, USA
- 2019

● **Science and Technology Scholarship**
Laboratorio de Genética Evolutiva, Universidad Nacional de Misiones 📍 Posadas, Argentina