

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 Laboratory.  Lubbock, USA
 - Thesis: A Comparative Genomics Approach to Unravel the Evolutionary Dynamics of Transposable Elements and Innate Immune Genes in Chiroptera
 - Graduation date: Summer 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.

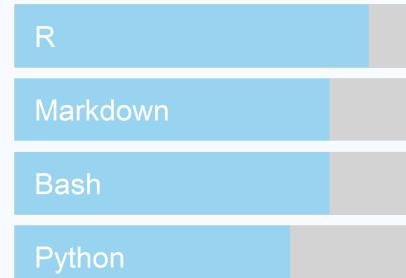
Present
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2015

- **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

-  Lubbock, Texas
-  +1 (904) 719-2072
-  xacfran@gmail.com
-  orcid.org/0000-0003-0955-8185
-  xacfran.github.io/digital-resume/
-  @Xacfra
-  in/francisco-x-castellanos

TECH SKILLS



My experience includes but is not limited to:

- Bioinformatics script development
- Genome annotation
- Transposable elements
- Gene prediction
- Protein
- Home range estimation

LAB SKILLS

- Cytogenetics and cellular biology:
- C-banding
 - NOR
 - DAPI/CMA₃
 - FISH
 - PCR
 - Human cell cultures

PROFESSIONAL EXPERIENCE

Present
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2023

- **Regional Chair**

 - 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 
 - 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 
 - 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 

February 2020

- **Karyological analyses as a tool for clinical diagnosis of human hereditary diseases**
Hospital Carlos Andrade Marin, Genetics and Molecular Unit 

2019
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2018

- **Herpetology data base enhancement project**
Laboratorio de Genética Evolutiva, Universidad Nacional de Misiones 

Fall 2021 & 2022

- **BIOL 1403 (BIOL I)**
Department of Biological Sciences, Texas Tech University 
 - Laboratory Teaching Assistant.
 - Lab course designed to develop scientific skills in Biology Major students.
 - Guided students to perform microscopy, spectrophotometry, and fermentation experiments.

Spring 2022 & 2023

- **BIOL 1404 (BIOL II)**
Department of Biological Sciences, Texas Tech University 
 - 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.

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
2022

Genomes and Genomes Evolution

Department of Biological Sciences, Texas Tech University

📍 Lubbock, USA

- Invited 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

The search behavior of terrestrial mammals (Submitted)

Michael J. Noonan, Ricardo Martinez-Garcia, Christen H. Fleming, ... **Castellanos, F. X.** ..., William F. Fagan, and Justin M. Calabrese.(2023). The search behavior of terrestrial mammals. Submitted to Nature Ecology and Evolution. [Preprint]: <https://www.biorxiv.org/content/10.1101/2022.12.31.521874v1>

2023

deAMPLifying the immune response? Antimicrobial peptide evolution in Chiroptera (In preparation)

Castellanos, F. X., Moreno-Santillan, D. Graham, H., Johnson, M., Paulat, N., Corthals, A., Davalos, L. and Ray, D. deAMPLifying the immune response? Antimicrobial peptide evolution in Chiroptera. To be submitted to Frontiers in Immunology

2023

A SINEphony of Bat Evolution: SINES as tools to reconstruct homoplasy-free phylogenies (In preparation)

Castellanos, F. X., Paulat, N., and Ray, D. A SINEphony of Bat Evolution: SINES as tools to reconstruct homoplasy-free phylogenies. To be submitted to Genes.

- 2023 ● **New species of spiny mouse of the genus *Neacomys* (Cricetidae, Sigmodontinae), from the northwestern Ecuador (In preparation)**
Tinoco, N., Koch, C., Colmenares J., **Castellanos, F. X.**, and Brito, J. New species of spiny mouse of the genus *Neacomys* (Cricetidae, Sigmodontinae), from the northwestern Ecuador. To be submitted to ZooKeys
- 2023 ● **How relevant are cytogenetics studies in *Myotis*? New evidence on chromosomal data reveals differential heterochromatic patterns in Argentinian myotine bats (In preparation)**
Castellanos, F. X., Ferro, J.M., Baldo, D. and Sanchez, M. How relevant are cytogenetics studies in *Myotis*? New evidence on chromosomal data reveals differential heterochromatic patterns in Argentinian myotine bats. To be submitted to Acta Chiropterologica.
- 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. Home range and utilization of landscape of the Andean bear *Tremarctos ornatus* in the Ecuadorian Andes. To be submitted to PLOS Biology.
- 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

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

2022

- **General Fellowships for New and Continuing Graduate Students**

The Ray Laboratory, Texas Tech University

 Lubbock, USA

2022

- **Study Abroad Competitive Scholarship**

The Ray Laboratory, 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