

William F. Chaparro-Pico

Microbiologist (BSc, MSc in Microbiology)

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EDUCATION

Master's degree in Microbiology

2023 - 2025

Industrial University of Santander (Bucaramanga, Colombia)

School of Microbiology

Molecular epidemiology of Respiratory Syncytial Virus and Rhinovirus in population of Santander during the years 2020 - 2024.

Bachelor's degree in Microbiology and Bioanalysis

2017 - 2022

Industrial University of Santander (Bucaramanga, Colombia)

School of Microbiology

Evaluation of the efficacy of physical, chemical and physicochemical treatments to saliva samples for the diagnosis of SARS-CoV-2 by direct RT-qPCR.

COMPLEMENTARY ACADEMIC TRAINING

COURSES

Portable sequencing techniques (MinION) applied to environmental monitoring

Alexander Von Humboldt Institute and Ecopetrol, Colombia

2025

Theoretical and Practical Introductory Course on Flow Cytometry and Operation of the Attune NxT Instrument

ThermoFisher, Colombia

2023

Pathobiology of Intracellular Infections

Yale University, Fogarty International Center, International Center for Medical Training and Research (CIDEIM, Colombia)

2023

IX International Course on Trypanosomatids

Universidad de Antioquia, Colombia

2022

High content and high predictive cellular models for host-pathogen interactions studies, disease modeling and drug discovery

Institut Pasteur, Montevideo, Uruguay

2022

EMPLOYMENT

Microbiologist — Molecular biology analyst — DNA sequencing by NGS — PSL Proanalisis S.A.S.

Date: July, 2025 - Now

PSL Proanalisis - Ecopetrol

Piedecuesta, Colombia

Microbiologist – In charge of molecular and bioinformatic analyses of oil-contaminated soil samples using metagenomic approaches. Responsibilities include DNA extraction, 16S rRNA gene amplification by PCR, Oxford Nanopore sequencing, and taxonomic profiling through bioinformatic pipelines.

Adjunct Professor (non-tenured professor position) - General Biology course

Date: February, 2025 - June, 2025

Universidad Industrial de Santander

School of Microbiology

Bucaramanga, Colombia

Adjunct professor of the General Biology course for first semester undergraduate students in Microbiology and Bioanalysis. My duties included lecturing on common laboratory practices in biology.

Adjunct Professor (non-tenured professor position) - Immunology course

Date: February, 2025 - June, 2025 and February, 2024 - June, 2024

Universidad Industrial de Santander

School of Microbiology

Bucaramanga, Colombia

Adjunct professor of the Immunology course for third semester undergraduate students in Microbiology and Bioanalysis. My duties included lecturing on common laboratory practices in immunology, both at the clinical diagnostic and research level and advising research seminars on immune response against bacterial, viral and fungal pathogens.

Adjunct Professor (non-tenured professor position) - Molecular Biology course

Date: August, 2024 - December 2024 and January, 2023 - February, 2023

Universidad Industrial de Santander

School of Microbiology

Bucaramanga, Colombia

Adjunct professor of the Molecular Biology course for second semester undergraduate students in Microbiology and Bioanalysis. My duties included lecturing on common laboratory practices in molecular biology.

Research assistant

Date: March, 2023 - May, 2023

Universidad Industrial de Santander

School of Microbiology

Viral DNA and RNA extraction, standardization and RT-qPCR performance for the detection of Respiratory Syncytial Virus and Rhinovirus in respiratory tract samples from patients with acute respiratory infection.

Research assistant

Date: August, 2022 - December, 2022

Universidad Industrial de Santander

School of Microbiology

Performance of molecular biology and immunology tests for the diagnosis of infectious diseases (*Trypanosoma cruzi*). Reports writing, administrative management and database updating for the Immunology and Molecular Epidemiology Research Group (GIEM-UIS).

PUBLICATIONS

Carbone-Schellman, J., Fontecilla-Escobar, J., Sales-Salinas, N., **Chaparro-Pico, W. F.**, Molina-Berríos, A., Ruete, M. C., González, P. A., Machuca, M. A., Opazo, M. C., Ezquer, M. E., and Duarte, L. F. (2025). **Therapeutic challenges in central nervous system viral infections: Advancing mesenchymal stem cell-based strategies for treating neuroinflammation and promoting tissue repair.** Frontiers in Immunology, 16. doi: 10.3389/fimmu.2025.1677433 2025

Sosa LM, Diaz ML, Lozano-Parra A, Bueno N, Niño D, Herrera V, Machuca MA, **Chaparro-Pico WF**, Niederbacher J. **Virus respiratorios en pacientes con síntomas de SARS-CoV-2 durante el periodo pandémico en Santander, Colombia.** Salud UIS. 2025; 57: e25v57a19.
doi: <https://doi.org/10.18273/saluduis.57.e:25v57a19>

Chaparo-Pico, W. F., et al. (In preparation). **Genomic surveillance of Respiratory Syncytial Virus and Rhinovirus in a region of Colombia during the COVID-19 pandemic (years 2020 – 2021) and the post-pandemic period (2023 – 2024).**

SCIENTIFIC EVENTS

POSTERS

Molecular characterization of Respiratory Syncytial Virus and Rhinovirus identified from respiratory samples from the population of Santander during the period 2020-2024. (Name in Spanish: Caracterización molecular de Virus Sincitial Respiratorio y Rinovirus identificados a partir de

muestras respiratorias de población de Santander durante el periodo 2020-2024)

October 2024

XXVI Latin American Congress of Clinical Biochemistry and XXII International Congress of the National College of Bacteriology (Name in Spanish: XXVI Congreso Latinoamericano de Bioquímica Clínica y XXII Congreso Internacional del Colegio Nacional de Bacteriología)

Differential circulation of Rhinovirus species and genotypes/clades during the COVID-19 pandemic and post-pandemic period (Name in Spanish: Circulación diferencial de especies y genotipos/clados de Rinovirus durante la pandemia de COVID-19 y en el periodo pospandemia

September 2024

XIV National Meeting on Research and Innovation in Infectious Diseases and IV Latin American Meeting on Research in Infectious Diseases (Name in Spanish: XIV Encuentro nacional de investigación e innovación en enfermedades infecciosas y IV encuentro latinoamericano de investigación en enfermedades infecciosas)

Detection of respiratory viruses during the introduction and the first wave of SARS-CoV-2

November 2023

XX Latin American Congress of Pediatric Infectious Diseases (Name in Spanish: XX Congreso Latinoamericano de Infectología Pediátrica)

Detection of viruses causing acute respiratory infection during the SARS-CoV-2 pandemic period (2020-2021) (Title in Spanish: Detección de virus causantes de infección respiratoria aguda durante el periodo pandémico (2020-2021) de SARS-CoV-2)

November 2023

U23 Fest International Congress: United for our well-being (Title in Spanish: Congreso internacional U23 Fest: Unidos por nuestro bienestar)

Chagas disease in population assisted in an elderly care center in Bucaramanga (Title in Spanish: Enfermedad de Chagas en población asistida en un centro de atención del adulto mayor en Bucaramanga

November 2023

U23 Fest International Congress: United for our well-being (Title in Spanish: Congreso internacional U23 Fest: Unidos por nuestro bienestar)

Replication study of genetic markers associated with Chagas disease in Latin American population (Name in Spanish: Estudio de replicación de marcadores genéticos asociados a la Enfermedad de Chagas en población latinoamericana)

June 2022

IX Symposium on Molecular Biology of Chagas Disease (Name in Spanish: IX Simposio de Biología Molecular de la Enfermedad de Chagas)

ORAL PRESENTATIONS

Molecular epidemiology of Rhinovirus infection: A66 genotype and fatal outcome in a case of acute respiratory infection. (Title in Spanish: Epidemiología Molecular de la infección por Rinovirus: Genotipo A66 y desenlace fatal en un caso de infección respiratoria aguda

September 2024

4th international health science meeting: science transforms (Title in Spanish: IV encuentro internacional de ciencias de la salud: la ciencia transforma)

Validation of a rapid immunochromatographic assay for the diagnosis of Chagas disease in the population of Santander (Title in Spanish: Validación de un ensayo inmunocromatográfico rápido para el diagnóstico de la enfermedad de Chagas en población santandereana

November 2023

U23 Fest International Congress: United for our well-being (Title in Spanish: Congreso internacional U23 Fest: Unidos por nuestro bienestar)

Association between genetic variants of the Masp2 gene and susceptibility to infection by *Trypanosoma cruzi* (Name in Spanish: Asociación de variantes genéticas del gen Masp2 y susceptibilidad a la infección por *Trypanosoma cruzi*)

August 2023

VIII Colombian Meeting Leishmaniasis and Chagas disease (Name in Spanish: VIII Reunión Colombiana Leishmaniasis y enfermedad de Chagas)

Single nucleotide variant of the ITGAM gene is associated with the development of Chronic Chagasic Cardiomyopathy (Name in Spanish: Variante de un solo nucleótido del gen ITGAM está asociada con el desarrollo de Cardiomielitis Chagásica Crónica)

August 2023

VIII Colombian Meeting Leishmaniasis and Chagas disease (Name in Spanish: VIII Reunión Colombiana Leishmaniasis y enfermedad de Chagas)

Evaluation of the effectiveness of physical, chemical and physicochemical treatments for the diagnosis of SARS-CoV-2 by direct RT-qPCR (Name in Spanish: Evaluación de la efectividad de tratamientos físicos, químicos y fisicoquímicos para el diagnóstico de SARS-CoV-2 mediante RT-qPCR directa)

December 2022

XVIII Congress of the Colombian Association of Parasitology and Tropical Medicine (Name in Spanish: XVIII Congreso de la Asociación Colombiana de Parásitología y Medicina Tropical)

Seroprevalence of *Trypanosoma cruzi* infection and characterization of patients with chronic Chagasic cardiomyopathy from five municipalities in Colombia. (Name in Spanish: Seroprevalencia de la infección por *Trypanosoma cruzi* y caracterización de pacientes con Cardiomielitis Chagásica Crónica procedentes de cinco municipios de Colombia)

November 2022

III International Meeting of Health Sciences and I International Congress on Life, Health and Well-being (Name in Spanish: III Encuentro Internacional de Ciencias de la Salud y I Congreso Interna- cional Vida, Salud y Bienestar)

Identification of genetic markers associated with Chagas disease in Latin American population (Name in Spanish: Identificación de marcadores genéticos asociadas a la Enfermedad de Chagas en población latinoamericana)

November 2021

U21 International Congress - Sustainable Development Goals (Name in Spanish: Congreso Internacional U21 - Objetivos de desarrollo sostenible)

RESEARCH EXPERIENCE

Molecular characterization of Respiratory Syncytial Virus and Rhinovirus in population of Santander during the period 2020 - 2024

2023 - 2024

Universidad Industrial de Santander

Responsibilities: perform RNA extraction from clinical samples, conduct RT-qPCR and RT-PCR to amplify viral genetic material, carry out Sanger sequencing for detailed genetic analysis, conduct phylogenetic analysis to understand the evolutionary relationships among virus strains, apply statistical methods to analyze epidemiological data.

Chagas disease cardiomyopathy: biomarkers of cardiac tissue

2024

Universidad Industrial de Santander - Johns Hopkins University - Fundación Cardiovascular de Colombia

Responsibilities: Perform dissection of cardiac tissue from explants of heart transplant patients, isolate RNA, proteins and inflammatory infiltrate cells from patients

Determination of the effectiveness of three different methods for pretreatment of human saliva samples used in the diagnosis of SARS-CoV-2 by direct RT-qPCR

2021 - 2022

Universidad Industrial de Santander

Responsibilities: collect human saliva samples for analysis, apply physical, chemical, and physicochemical treatments to inactivate samples and extract RNA, perform RT-qPCR to detect SARS-CoV-2 in treated human samples, compare the results of treated samples with the gold standard method, conduct statistical analysis to evaluate the effectiveness of each pretreatment method.

Molecular identification of *Trypanosoma cruzi* in peripheral blood samples from patients in the chronic phase of Chagas disease

2019 - 2020

Universidad Industrial de Santander

Responsibilities: extract DNA from peripheral blood samples of patients, perform PCR to detect *Trypanosoma cruzi*, perform electrophoresis to analyze PCR products, conduct statistical analysis to interpret the results and

validate the identification of *Trypanosoma cruzi*.

PROFESSIONAL SKILLS

Laboratory skills

Working in BSL-1 and BSL-2 laboratories, Bacteria isolation, Sanger and Nanopore Sequencing, DNA/RNA Extraction and Purification, PCR, RT-PCR, RT-qPCR, Gel Electrophoresis for nucleic acids and proteins, restriction enzyme digestion, Western Blotting, ELISA, flow cytometry, cell culture, primer design, multiple sequence alignment and phylogenetic analysis.

Software

Metagenomic analysis (Kraken2, Bracken, NanoPlot, NanoFilt), Python, R, IQ-Tree, BEAST Software - Bayesian Evolutionary Analysis Sampling Trees 2, Tracer, FigTree, Office, L^AT_EX

Languages

English (B2), Spanish (Native)

GRANTS AND FELLOWSHIPS

Master's Scholarship

High-level human capital development for the Department of Santander at the Universidad Industrial de Santander BPIN 2020000100536