

Marcos Chiñas Hernández

marcoschinashernandez@gmail.com

As a genomic scientist, I use my expertise to integrate biology, computational analysis, and statistics to solve problems and understand complex diseases. Specific fields of interest include computational biology, multi-omics, immunology, and cancer.

EDUCATION

Oct 2024 - Sep 2028	Incoming PhD student on Molecular and Cellular Medicine at Oxford University <ul style="list-style-type: none">I will characterize the gut of Ankylosing Spondylitis individuals using spatial-transcriptomics.Awarded Clarendon Scholarship and Kennedy Trust Prize Studentship
2017 - Sep 2021	B.Sc. Genomics Sciences Grade 9.4/10. National Autonomous University of Mexico (UNAM) Center for Genomic Sciences, Cuernavaca, Mexico

RESEARCH WORK EXPERIENCE

Nov 2021 - Present	Research Assistant at Boston Children's Hospital, Harvard Medical School Boston, MA, USA. Advisor: Dr. Maria Gutierrez-Arcelus. <ul style="list-style-type: none">Systems immunology:<ul style="list-style-type: none">Analyzed bulk and single-cell RNA-seq data of immune cell types.Identified relevant cell types for ankylosing spondylitis by integrating GWAS with transcriptomics.Analyzed TCR-sequencing data to identify an expanded t-cell receptor gene in multisystemic inflammatory syndrome in children.Created interactive web pages to visualize functional genomics datasets (jbcmultiomics.com)
July 2021 – Sep 2021	Research Intern at Bellvitge Biomedical Research Institute (IDIBELL) Barcelona, Catalonia, Spain. Advisor: Dr. Álvaro Aytes. <ul style="list-style-type: none">Transcriptomics of androgen receptor mutants PC3 cells
Feb 2020 - Jun 2021	Research Intern at Sequencing and Bioinformatics Unit, Institute of Biotechnology, UNAM Cuernavaca, Mexico. Advisor: Dr. Fidel Alejandro Sánchez Flores. <ul style="list-style-type: none">BSc thesis: Transcriptome of LNCAP cells treated with AZD5363.
Dec 2019 - Jan 2020	Research Intern at Instituto Aggeu Magalhães, FIOCRUZ Recife, Brazil. Advisor: Dr. Antônio Mauro Rezende. <ul style="list-style-type: none">Transcriptome of <i>Aedes aegypti</i> colony chronically exposed to the larvicide Bti
Sep 2019 - Dec 2019	Research Intern at the Department of Molecular Microbiology, Institute of Biotechnology, UNAM Cuernavaca, Mexico. Advisor: Dr. Sabino Pacheco Guillén.
Mar 2018 - Jun 2018	<ul style="list-style-type: none">Projects related to <i>Bacillus thuringiensis</i> and insecticidal proteins<ul style="list-style-type: none">Guide RNA design and <i>in vitro</i> test for CRISPR-Cas9.Phylogenetics of <i>Bacillus thuringiensis</i> GR007.Learning molecular biology techniques: PCR, Gel electrophoresis, DNA extraction, Cloning of <i>Cry</i> genes, and protein purification.

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AWARDS

Mar 2024	Clarendon Scholarship. Balliol College Foley-Bejar Scholarship.
Jan 2024	Kennedy Trust Prize Studentship.
May 2023	SPARTAN Research Oral Presentation Award. \$1K
Nov 2022	Joint Biology Consortium Microgrant (\$5K) off parent award NIH/NIAMS 2P30 AR070253. Project: Mechanism and Heterogeneity of SLE in Latinx in Response to Stimulus Using Single Cell and Repertoire Profiling.
Sep 2021	Honorific Mention B.Sc. in Genomic Sciences.
Summer 2021	National Autonomous University of Mexico Scholarship “Initiation to Research” to perform an internship in Barcelona, Spain Results:418073593

TECHNICAL SKILLS

Bioinformatics

- **Programming:** R, Bash, Python. Git/GitHub.
- **Bulk / single-cell RNA-seq:** quality control, differential expression, pathway enrichment analysis.
- **Integration of transcriptomics with GWAS:** colocalization analysis, identification of disease-relevant cell types score.
- TCR-sequencing.
- Genome assembly and annotation.
- Data visualization, interactive and static web pages.

ADDITIONAL COURSES

Genomics	<u>Johns Hopkins University (JHU): Introduction to Genomic Technologies, Statistics for Genomic Data Science (GDS), Bioconductor for GDS, Python for GDS, Algorithms for DNA Sequencing, Command Line Tools for GDS, GDS with Galaxy, DTU. Whole genome sequencing of bacterial genomes - tools and application, Using Shiny to Plot Differential Gene Expression</u>
Computer science	<u>Harvard edX, Data Science: Visualization and Productivity Tools. Create a Virtual Private Cloud (VPC) Using AWS, Launch an auto-scaling AWS EC2 virtual machine, Access an EC2 instance shell from the AWS console</u>
Others	<u>UNAM, Management skills (5 courses and 1 capstone)</u> <u>JHU Understanding Prostate Cancer, Fundamentals of Immunology: Innate Immunity and B-Cell Function, Investment Management: Meeting Investors' Goals, Portfolio and Risk Management, Securing Investment Returns in the Long Run, Understanding Financial Markets.</u>

CONFERENCES

Chiñas, M., et al. Integrative Functional Genomics Points to Natural Killer Cells as Key Drivers in Pathogenesis of Ankylosing Spondylitis. **Poster presentation** delivered at American College of Rheumatology Convergence, San Diego, Nov 14, 2023.

Chiñas, M., et al. Integrative Functional Genomics Points to Natural Killer Cells as Key Drivers in Pathogenesis of Ankylosing Spondylitis. **Oral presentation** delivered at International Symposium for the 20th Anniversary of the Bachelor's Program in Genomic Sciences, LCG-UNAM, Mexico, September 01, 2023.

Chiñas, M., et al. Integrative Functional Genomics Points to Natural Killer Cells as Key Drivers in Pathogenesis of Ankylosing Spondylitis. **Oral presentation** delivered at the FOCIS, Boston, June 22, 2023.

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Chiñas, M., et al. "Integrative Functional Genomics Points to Natural Killer Cells as Key Drivers in the Pathogenesis of Ankylosing Spondylitis", **Oral presentation** delivered at the SPARTAN Annual Meeting, Cleveland, May 19, 2023.

PUBLICATIONS

Wang, Q., Martínez-Bonet, M., Kim T., Sparks, J., Ishigaki K., Chen, X., Sudman M., Aguiar V., **Chiñas, M.**, Wactor A., Wauford, B., Marion M.C, Gutierrez-Arcelus M., Bowes, J., Eyre, S., Nordal, E., Prahalad S., Rygg, M., Videm V., Raychaudhuri S., Weirauch MT., Langefeld CD., Thompson SD., Nigrovic, PA. (2023). **Identification of a regulatory pathway governing TRAF1 via an arthritis-associated non-coding variant.** Cell Genomics, 100420. doi: <https://doi.org/10.1016/j.xgen.2023.100420>.

Alegre-Martí A.,* Jiménez-Panizo A.,* Martínez-Tébar A.,* Peralta-Moreno M., Abella M., Antón R., **Chiñas M.**, Piulats JM., Rojas A., Fernández-Recio J., Rubio-Martínez J., Aytes A., Fuentes-Prior P., Estébanez-Perpiñá E. (2023). **A hotspot for posttranslational modifications on the androgen receptor dimer interface drives pathology and resistance to antiandrogens.** Sciences Advances. DOI: [10.1126/sciadv.ade2175](https://doi.org/10.1126/sciadv.ade2175)

Carvalho, K.S., Rezende, T.M.T., Romão, T.P., Rezende, A.M., **Chiñas, M.**, Guedes, D.R.D., Paiva-Cavalcanti, M., Silva-Filha, M.H.N.L. (2023). ***Aedes aegypti* Strain Subjected to Long-Term Exposure to *Bacillus thuringiensis* svar. *israelensis* Larvicides Displays an Altered Transcriptional Response to Zika Virus Infection.** Viruses, 15, 72. <https://doi.org/10.3390/v15010072>

Lam, K.P., **Chiñas, M.**, Julé, A.M., Taylor, M., Ohashi, M., Benamar, M., Crestani, E., Son, M.B.F., Chou, J., Gebhart, C., Chatila, T., Newburger, J., Randolph, A., Gutierrez-Arcelus, M., & Henderson, L. A. (2022). **SARS-CoV-2-specific T cell responses in patients with multisystem inflammatory syndrome in children.** Clinical Immunology, 243, 109106. <https://doi.org/10.1016/j.clim.2022.109106>

Pacheco, S., Gómez, I., **Chiñas, M.**, Sánchez, J., Soberón, M., & Bravo, A. (2021). **Whole Genome Sequencing Analysis of *Bacillus thuringiensis* GR007 Reveals Multiple Pesticidal Protein Genes.** Frontiers in microbiology, 12, 758314. <https://doi.org/10.3389/fmicb.2021.758314>

MANUSCRIPTS

Chiñas M, Fernandez-Salinas D, Aguiar V, Caballero-Nieto V, Lefton M, Nigrovic PA, Ermann J, Gutierrez-Arcelus M. (2023). **Functional genomics implicates natural killer cells as potential key drivers in the pathogenesis of ankylosing spondylitis.** (Under revision, Arthritis and Rheumatology) doi: <https://doi.org/10.1101/2023.09.21.23295912>

Suliman S., Nieto-Caballero VE., Asgari S., Lopez K., Iwany SK., Luo Y., Nathan A., Fernandez-Salinas D., **Chiñas M.**, Huang CC, Zhang Z, León SR., Calderon RI., Lecca L, Murray M, Rhijn IV., Raychaudhuri S., Moody DB., Gutierrez-Arcelus M. (2023). **History of Tuberculosis Disease Is Associated with Genetic Regulatory Variation in Peruvians.** medRxiv. <https://doi.org/10.1101/2023.06.20.23291558>.(Under revision PLOS Genetics)