

Dulce Alejandra Carrillo Carlos
Genomic Sciences undergraduate student
Cuernavaca, Morelos, México
alecarrillocarlos@gmail.com
<https://github.com/alejandracarrilloca>
(+52) 722 253 8753

Professional Profile

I am a Genomic Sciences undergraduate student at the National Autonomous University of Mexico (UNAM) with a strong interest in immunology and cancer immunology. My academic and research focus lies in understanding the genomic and molecular mechanisms that regulate immune responses. I am particularly interested in how computational biology and bioinformatics can be applied to identify key immune-related genes, cellular interactions, and signaling pathways that influence tumor progression, autoimmune diseases, immune evasion, and therapeutic resistance. I am passionate about interdisciplinary approaches combining molecular biology, computational analysis, and functional genomics. Additionally, I am interested in the development and optimization of gene- and cell-based immunotherapies.

I have academic training in genomics as well as other omic sciences, bioinformatics, genetics, molecular and cell biology, biochemistry, linear algebra and probability. My scientific approach is guided by critical thinking, ethical responsibility, and a strong commitment to social impact. My core values, respect, honesty, perseverance, responsibility, and dedication, inform both my academic work and collaborative relationships.

I am deeply committed to open science practices, including transparent code and data sharing, to support reproducibility and replicability in biomedical research. I firmly believe that improving our understanding of the immune system in cancer can drive the development of more effective and personalized treatments, ultimately improving patient outcomes and quality of life.

Education

- B.Sc. in Genomic Sciences, National Autonomous University of Mexico - Genomic Sciences Center – Expected graduation: 2028

Languages

Spanish: native

English: full professional proficiency (C2)

French: elementary proficiency (A2)

Professional interests

Cancer immunology · Neuroimmunology · Neurodegenerative diseases · Immunogenomics · Tumor microenvironment · Translational immunology · Autoimmune Diseases · Stem cell biology · Regulatory networks · Epigenomics ·

Human genetics · Genetic engineering · Bioinformatics · Computational biology · Translational medicine

Professional abilities

Teamwork, solution-focused, proactive, scientific project development

Technical and Laboratory Skills

- Handling of laboratory equipment and instrument
- Viability staining and basic microscopy techniques
- Flow cytometry (sample preparation, acquisition, and basic data interpretation)
- Cell culture (maintenance of cell lines, sterile techniques)
- PCR and gel electrophoresis
- Plasmid purification and quantification
- Preparation of buffers and laboratory solutions

Computational abilities

- **Algorithm development:** Implementation of custom algorithms for data processing, analysis, and interpretation of high-throughput biological data.
- **Programming and scripting:** Bash/Shell, Python, C, data analysis, and pipeline creation.
- **Flow cytometry data analysis:** Experience using FlowJo for gating strategies and population identification.
- **Graph theory and network analysis:** Graph theory applications for biological network analysis.
- **Data analysis and visualization:** Data analysis (e.g. NumPy or Pandas) and creation of informative and publication-ready images using tools such as Matplotlib and Seaborn.
- **Reproducible research:** Familiar with practices for version control (e.g. Git), reproducibility, and code documentation.
- **Design & Engineering Software:** Adobe InDesign, AutoCAD, Fusion 360.
- **Operating Systems:** Linux/Unix environments, command-line tools.

Research Experience

Laboratory of Dr. Yvonne Jane Rosenstein Azoulay, Institute of Biotechnology, National Autonomous University of Mexico

Research Intern – Immunology

December 2024 – Present

- Conduct research on the role of CD43 in immune cell signaling and function.
- Perform mammalian cell culture to maintain and expand immune cell lines for experimental assays.
- Conduct flow cytometry experiments and cell viability analysis.

Laboratory of Dr. Julio A. Freyre-Gonzalez, Center for Genomic Sciences,

National Autonomous University of Mexico

Trainee – Systems Biology

December 2024 – June 2025

- Study the organization and evolution of biological networks using graph theory and computational modeling approaches.
- Analyze large-scale omics datasets to uncover evolutionary and organizational principles of complex biological systems.
- Develop custom algorithms and computational tools to simulate network dynamics and evolutionary patterns.

Honors and Awards

2024 — Finalist, *Líderes Hablan*

Premio Lidera 2024, Universidad Anáhuac – Ciudad de México, México

- English-speaking contest focused on important social issues.
- Demonstrated advanced public speaking and social awareness.
- Recognized among the top 5 finalists for exceptional communication, leadership, and critical thinking skills

2023 — Finalist, Mathematics

Premio Lidera 2023, Universidad Anáhuac – Mérida, México

- Selected among the top 10 finalists in a mathematics competition focused on analytic geometry, with participants from Mexico and Latin American countries.

2020 — 2nd Place, Team Mathematics

Premio Lidera, Semper Altius International School Network – Tabasco, México

- Awarded second place in a Latin American mathematical reasoning competition highlighting teamwork and problem-solving skills.

Leadership Experience

Volunteer – Soñar Despierto (Non-Profit)

Guadalajara, Jalisco, Mexico | 2021–2023

- Contributed to social support activities benefiting vulnerable children and communities.

Organizer – Model United Nations, Anahuac University

Metepec, Estado de México, México | 2023

- Led the comprehensive planning, organization, and execution of a Model United Nations event with over 280 participants.
- Coordinated the development and selection of debate topics, managed communication and collaboration with university authorities, and implemented outreach strategies to promote the event.

- Oversaw budget management, procurement of supplies, participant registration, and led a team of 40+ staff members.
- Developed strong skills in strategic event planning, team leadership, stakeholder coordination, and operational logistics.

Volunteer – Social Media Team

Mexican Immunology Society

- Assisted in science communication and outreach through managing social media content.