Luis Santiago Mille-Fragoso

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SKILLS

Technical: mathematical modeling, programming (web, python, MATLAB), data analysis, bioinformatics, systems biology, deep learning, computational protein design, PyMol.

Biology: tissue engineering, protein engineering, cloning, PCR, plasmid design, BSL2, sterile/aseptic techniques, RNA extraction, RNA transfection, protein design, molecular biology, cell engineering, transduction, transfection, flow cytometry, plate reader, microfluidics, RNA sequencing, leadership, mentorship, biomanufacturing.

RELEVANT EXPERIENCE

Graduate Researcher — Jun 2022 – Current, Stanford, CA

Gao Lab, Stanford University

• Developing protein- and RNA-based molecular sensors for therapeutic applications.
• Created a first-in-class, mRNA compatible cell surface synthetic receptor platform for extracellular biomolecular sensing, while gaining proficiency in mammalian cell culture, molecular biology, experiment planning, and critical scientific thinking.
• Publication under review in Nature Chemical Biology and pending patent (U.S. Provisional Application No. 63/399,400).

Research Assistant — Aug 2020 – Jun 2021, Mexico City

Rangel Lab, Mexican Institute of Genomic Medicine

• Conducted bioinformatic analyses for the de novo sequencing and annotation of the Leishmania Mexicana (LM) parasite, utilizing STAR, Bowtie2, DESeq2, Trinity and custom python scripts.
• Analyzed RNASeq data to identify SNPs, copy number variants, and differential gene expression across various LM phenotypes in human samples, contributing to a deeper understanding of host-parasite interactions.

Research Assistant — Jun 2019 – Jul 2020, Boston, MA

Zhang Lab, Brigham and Women's Hospital

• Designed and developed hardware and software to build and automate DLP and extrusion bioprinters.
• Printed cell-laden, hydrogel-based constructs that mimic the 3D structure of tissues such as breast cancer.
• Manufactured of lab-on-a-chip devices for tissue engineering and drug screening
• Contributed significantly to more than 5 publication, particularly in experimental design and execution.

Co-founder and Software Engineer — Nov 2017 - May 2018, Mexico City

DuckT

• Partnered with a digital marketing firm to develop digital business strategies and deliver software solutions to their clients.
• Developed the first pilot version of an online insurance purchasing platform in Mexico in partnership with an insurance brokerage, enhancing user experience and increasing operational efficiency by 70%.
• Led meetings with clients to gather requirements, review project progress, and present product updates

Software Engineering Intern — Feb 2017 - Oct 2017, Mexico City

Bluemessaging Mexico

• Implemented new features using JavaScript and Apache Cordova, such as enabling and managing e-signatures on the company's web platform and mobile application.
• Designed and implemented chatbots for Twitter's direct messaging using Python.

EDUCATION

Ph.D. in Bioengineering — Current

Stanford University • Stanford, CA

B.S. in Electrical Engineering — Dec 2020

Minor in Robotics • Monterrey Institute of Technology, Mexico • Mexico City • GPA: 3.87
• Honored as an Outstanding Engineering Student in 2018 and graduated Cum Laude.

SELECTED PUBLICATIONS

• **Mille L.S.** & Zhang X. et al. Post-Transcriptional Modular Synthetic Receptors. bioRxiv, 2023. (Under revision in Nature Chemical Biology)

• Ahn Horst T, **Mille LS**, et al. An expanded whole-cell model of E. coli links cellular physiology with mechanisms of growth rate control. NPJ Systems Biology and Applications, 2022, in press.

• Wang M, Li W, **Mille LS**, et al. Digital Light Processing-based Bioprinting with Composable Gradients. Advanced Materials, 2021, in press.

• Li W, Wang M, **Mille LS**, et al. A Smartphone-Enabled Portable Digital Light Processing 3D Printer. Advanced Materials, 2021, in press.

• Valverde M, **Mille LS**, et al. The Glomerulus: A Review on Current Biomimetic Models. Nature Reviews Nephrology, 2021, in press.

• Aleman J, Kilic T, **Mille LS**, et al. Microfluidic Integration of Regeneratable Electrochemical Affinity-Based Biosensors for Continual Monitoring of Organ-on-a-Chip Devices. Nature Protocols, 2021, in press.

INVOLVMENT

Co-founder and Student Lead — Mar 2023 - Current

Stanford Synthetic Biology • sb.stanford.edu

• Oversaw the organization of university-wide events (100+ attendees), including symposiums and seminar talks focused on synthetic biology. Coordinated with invited speakers from industry and academia.

Mentor — Sept 2023 - Current

Stanford ChEM-H Postbaccalaureate Program

• Trained a mentee on fundamental molecular biology techniques and supervised the design and execution of a diverse experiments in mammalian cells, while supporting their professional and personal growth.

Poster presentations

Synthetic Biology: Engineering, Evolution & Design (2024) & GRC Synthetic Biology (2023)

Title: Post-Transcriptional Modular Synthetic Receptors

FELLOWSHIPS

• Stanford Bio-X SIGF Fellow – 3 Year Interdisciplinary Graduate Research Fellowship — **Sept 2024 - May 2027**

• Stanford Graduate Fellow – 3 Year Graduate Research Fellowship — **Sept 2021 - May 2024**

• Stanford ChEM-H Chemistry/Biology Interface Trainee — **Sept 2021 - Aug 2026**