

Lya Chiñas Serrano (she/her)

lya.chinas@mail.utoronto.ca | [GitHub](#) | [Website](#) | [LinkedIn](#)
Toronto, Canada

PhD student ~ Machine Learning for Biology

EDUCATION

University of Toronto, Dept. of Chemical Engineering and Applied Chemistry <i>Direct-entry Doctor of Philosophy (PhD)</i>	Sept 2024 – Present Toronto, Canada
Monterrey Institute of Technology and Higher Education (ITESM) <i>Bachelor of Science in Biotechnology Engineering</i> GPA 4.0, First in Class Honors	Aug 2020 – Jun 2024 Puebla, Mexico

EXPERIENCE

Laboratory for Metabolic Systems Engineering, University of Toronto <i>Graduate Student Researcher, supervised by Prof. Radhakrishnan Mahadevan</i>	Sept 2024 – Present Toronto, Canada
<ul style="list-style-type: none">Developing machine learning frameworks for computational biology and metabolic engineering applications. This encompasses:<ul style="list-style-type: none">Designing and evaluating deep learning architectures (CNNs, Transformers) to predict enzyme kinetic parameters and <i>E. coli</i> phenotypes.Utilizing protein and genomic Large Language Models (LLMs) for representation learning and predictive cell modeling of eukaryotes.Building end-to-end machine learning pipelines, managing multi-omics data compilation, model training, and evaluation.	
University of Toronto <i>Teaching Assistant</i>	Jan 2025 – Present Toronto, Canada
CHE1148 'Artificial Intelligence for Applied Chemistry and Chemical Engineering', Winter 2026 Supervised by Prof. Benjamin Sanchez-Lengeling	
<ul style="list-style-type: none">Provided one-on-one mentorship to students (60+) on deep learning topics, including technical guidance on code implementation and debugging.Supervised the course's final project, helping students develop custom deep learning solutions for chemical engineering, materials science, and biochemistry.	
CHE1147 'Chemical Data Science and Engineering', Fall 2025 Supervised by Prof. Mohamad Moosavi	
<ul style="list-style-type: none">Prepared and delivered tutorials to students (60+) on core data science and machine learning topics.Directed the course's final project, overseeing custom end-to-end ML pipelines around chemical engineering, materials science, and biochemistry.	
CHE222 'Process Dynamics: Modeling, Analysis and Simulation', Winter 2025 Supervised by Dr. Alexandre Tremblay	
<ul style="list-style-type: none">Prepared and delivered tutorials to students (150+) on numerical methods, applied to chemical engineering processes.Supervised hands-on programming laboratories on MATLAB and Python.Designed and supervised the course's final project, focused on programming to model chemical reactor dynamics.	

- Mitacs Inc.** Apr 2025 – Oct 2025
Globalink Mentor Toronto, Canada
- Served as the primary system of support and problem resolution for a cohort of 7 international students in the Globalink Research Internship program.
 - Facilitated the settlement of students and guided administrative processes in Canada (banking, SIN registration).
 - Conducted social events and fostered a supportive community in a multicultural environment.
- Laboratory for Metabolic Systems Engineering, University of Toronto** Jul 2023 – Oct 2023
Research Intern, supervised by [Prof. Radhakrishnan Mahadevan](#) Toronto, Canada
- Kinetic parameter-constrained Genome-Scale Metabolic Models (GEMs)**
- Created a Python framework for the automated refinement of GEMs, with optimization through linear and non-linear programming.
 - Designed a pipeline that efficiently retrieves and processes information across proteomics databases.
- Monterrey Institute of Technology and Higher Education** Feb 2023 – Jun 2023
Organizing Committee Member, supervised by [Prof. Marco A. Mata Gómez](#) Puebla, Mexico
- BioMolecule Research Lab 2023 Symposium**
- Organized the first edition of a scientific research symposium, featuring participation from national and international researchers as speakers, with sponsorship from the biotechnology enterprise Sartorius.
 - Managed all logistical and academic aspects of the poster presentations, involving research projects at undergraduate and graduate levels.
- Mexican Association of Food Science (AMECA, A.C.)** Jun 2022 – Nov 2022
Organizing Committee Member, supervised by [Prof. Celeste C. Ibarra Herrera](#) Puebla, Mexico
- Latin Food 2022: Food Science, Biotechnology & Safety Congress**
- Participated in the organization and logistics of one of Mexico's largest biotechnology congresses, featuring the participation of internationally recognized researchers, companies, and institutions.
 - Executed an efficient pipeline for reviewing over 500 scientific abstracts, published as part of a special issue in the *Journal of BioProcess and Chemical Technology* (ISSN: 2683-3271).

PUBLICATIONS

- R. A. Barghout, M. Kirby, A. Zheng, **L. Chinas**, M. Mohammadi, Z. Xu, B. Sanchez-Lengeling, and R. Mahadevan, "Machine Learning for Sequence-to-Function Approaches," in *Machine Learning and Big Data-enabled Biotechnology*, John Wiley & Sons, 2026, pp. 103-129.

PRESENTATIONS

- 10th Conference on Constraint-Based Reconstruction and Analysis (COBRA)** 2026
- BactoCat: A Hybrid Modeling Framework to Estimate In Vivo Enzyme Kinetics*, poster presentation.
- International Conference on Learning Representations (ICLR)** 2025
- Bridging Sequence and Kinetics: Utilizing Multi-scale Representations for Genome-Scale Metabolic Models*, poster presentation at the Learning Meaningful Representations of Life Workshop.
- 9th Conference on Constraint-Based Reconstruction and Analysis (COBRA)** 2024
- kinGEMs: Advancing Enzyme-Constrained Genome-Scale Models with Deep Learning Predicted Kinetic Parameters*, oral presentation.
 - Dynamic Flux Balance Analysis approach for evaluating the economic potential of bioproducts of industrial relevance*, poster presentation.
- American Institute of Chemical Engineers Annual Meeting (AIChE)** 2024
- Enhancing Compound-Protein Interaction Prediction with Confidence Assessment*, oral presentation.

HONORS AND AWARDS

- SECIHTI Scholarship (Secretary of Science, Humanities and Innovation, Mexico)** 2024
 - Government fellowship that provides funding to top Mexican students enrolled in graduate programs abroad.
- Connaught International Scholarship (UofT)** 2024
 - Award for financial support to top international PhD students at the University of Toronto, recognizing outstanding academic achievements and research potential.
- Honorary Mention of Excellence (ITESM)** 2024
 - Recognition given to the graduating students with the 5% highest GPAs across all undergraduate and graduate units of the Class.
- Mitacs Globalink Research Internship** 2023
 - Scholarship to conduct a research internship in Canada with sponsored living expenses.
- Best GPAs in the Department of Engineering and Science (ITESM)** 2020-2024
 - Achieved recognition throughout all terms of undergraduate studies.
- Academic Talent Scholarship for Undergraduate Studies (ITESM)** 2020
 - Awarded a 60% scholarship for outstanding academic performance and ranking among the 5% highest scores on the admission exam.

SKILLS

- Machine Learning & Modeling:** Deep Learning, Neural Networks, Optimization, Linear Programming, Predictive Modeling
- Languages and software:** Python, MATLAB, HTML, CSS
- Tools:** PyTorch, TensorFlow, scikit-learn, NumPy, Pandas, Matplotlib, Git, Bash/Shell, Alliance Canada HPC Clusters (Slurm), LaTeX
- Graphic Design and Content Creation:** Adobe (Photoshop, Illustrator, Premiere Pro), Affinity (Photo, Designer, Publisher)

LANGUAGES

- English** – Full professional proficiency
Certificate: TOEFL C1
- French** – Elementary proficiency
Certificate: DELF A2 (with merit)
- Spanish** – Native proficiency

FELLOWSHIPS

- Massey College Junior Fellowship** 2024 – Present
- American Institute of Chemical Engineers** 2024 – 2025

VOLUNTEERING

- Globalink Ambassador** Jan 2024 – May 2024
 - Provided personalized guidance and mentorship to incoming interns in the Mitacs GRI 2024 program in Canada.
- Science and English tutoring classes** Aug 2021 – Jun 2022
 - Tutored undergraduate students at *ITESM* in Chemistry, Biology, Programming, and Mathematics courses.

- Prepared and conducted English classes for 2nd-grade students at '*Manuel Ávila Camacho*' school in Puebla, Mexico.

'Indigenia Mundus A.C.' Non-profit organization

Dec 2021 – Feb 2022

- Produced a podcast episode aimed at promoting the organization's social work to support the *Wixárika* indigenous community in Mexico.

'Al Diablo Las Tallas A.C.' Non-profit organization

Jun 2021 – Aug 2021

- Created a digital modeling portfolio for the organization's members to promote the inclusiveness of handicapped individuals in the fashion industry.