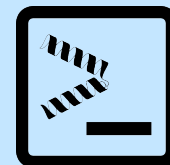# Willow Ross Carretero Chavez

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## Education

**Massachusetts Institute of Technology** *Cambridge, MA*
*B.Sc. in Biology — GPA: 4.7* *Expected Dec 2024*
- Coursework: Fundamentals of Programming, Math for CS, Topics in Systems and Computational Biology

## Professional Experience

**Massachusetts Institute of Technology** *Cambridge, MA*
*Undergraduate Researcher @ Sinskey Lab* *Sep 2024 — Present*
- Assisted in production and purification of SARS-CoV2 virus-like particles in human cell lines

**Google** *Seattle, WA*
*Software Engineering Intern* *Jun 2024 — Aug 2024*
- Implemented horizontal scaling of gRPC proxy between Kubernetes control plane and cluster networks in Golang, collaborationg with the Kubernetes Cloud Provider SIG
- Refreshed the Spanish translation of the open source Comprehensive Rust tutorial

*Software Engineering Intern* *May 2023 — Aug 2023*
- Designed and implemented extensions to the Kubernetes Addon Manager (KAM) in Golang to accelerate Kubernetes addon development and deployment
- Reduced KAM queries per second by up to 20% across the Google Kubernetes Engine fleet

**Massachusetts Institute of Technology** *Cambridge, MA*
*Undergraduate Researcher @ Jensen Lab* *Sep 2022 — Dec 2022*
- Expanded a novel method of chemo-enzymatic retrosynthesis using Python and RDKit
- Presented a poster at the 2022 ML for Pharmaceutical Discovery and Synthesis Consortium

*Undergraduate Researcher @ Sinskey Lab* *Feb 2021 — May 2021*
- Executed cell nanodrop, ddPCR, qPCR, and ELISA assays for DNA and protein quantification

**Wayfair** *Boston, MA*
*Software Engineering Co-Op* *Jan 2022 — Aug 2022*
- Used diverse enterprise software tools (Docker, Kafka, Google BigQuery, Kubernetes, DataDog) as part of a large team of software engineers and data analysts
- Created multiple microservice APIs using Java, Python, FastAPI, and PostgreSQL

**D. E. Shaw Research** *New York, NY (Remote)*
*Early College Intern* *May 2021 — Aug 2021*
- Ran free energy perturbation (FEP) molecular dynamics simulations of ligand-receptor systems
- Created novel method of FEP network generation in Python using integer linear programming

**Kufareva Lab @ UCSD Skaggs School of Pharmacy** *Chula Vista, CA*
*Volunteer, Staff Research Associate* *Jul 2018 — Aug 2018, Feb 2019 — Dec 2020*
- Wrote toolkit to verify, validate, and visualize Boolean models of cell signaling networks
- Analyzed mass spectrometry phosphoproteomic (TMT-MS$^2$) data using R
- Implemented new method of protein binding pocket similarity scoring using MolSoft ICMScript

## Publications

**Carretero Chavez, W.**, Krantz, M., Klipp, E. et al. *kboolnet*: a toolkit for the verification, validation, and visualization of reaction-contingency (*rxncon*) models. *BMC Bioinformatics* **24**, 246 (2023).

## Skills

- Fluent in English & Spanish, can converse in French
- Python, Java, Golang, R, Rust
- Kubernetes, Docker
- Linux and shell scripting
- Git, GitHub Actions, CI/CD
- Knows when to ask for help
- Driven by results and data
- Fast learner and curious