



# Willow Ross Carretero Chavez

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## Education

**Massachusetts Institute of Technology**

Cambridge, MA

B.S. in Biology — GPA: 4.6

Graduated Feb 2025

- Coursework: Fundamentals of Programming, Topics in Systems and Computational Biology, Molecular Basis of Infectious Disease, Molecular Biology, Microbial Physiology

## Professional Experience

**Massachusetts Institute of Technology**

Cambridge, MA

Undergraduate Researcher @ Sinskey Lab

Sep 2024 — Dec 2024

- Characterized SARS-CoV2 virus-like particles (VLPs) samples produced in HEK-293 cells using Western blot, nanoparticle tracking analysis, and ACE2 receiver cell assays

**Google**

Seattle, WA

Software Engineering Intern

May 2023 — Aug 2023, Jun 2024 — Aug 2024

- Enabled horizontal scaling of gRPC proxy between Kubernetes control plane and cluster networks in Golang, collaborating with the Kubernetes Cloud Provider SIG
- Designed and implemented extensions to the Kubernetes Addon Manager (KAM) in Golang to accelerate Kubernetes cluster addon development and deployment

**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

**Wayfair**

Boston, MA

Software Engineering Co-Op

Jan 2022 — Aug 2022

- Collaborated with a team of software engineers and data analysts working on production code
- 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

**Massachusetts Institute of Technology**

Cambridge, MA

Undergraduate Researcher @ Sinskey Lab

Feb 2021 — May 2021

- Executed cell viability, nanodrop, ddPCR, qPCR, and ELISA assays for DNA and protein quantification of samples from adeno-associated virus (AAV) production in bioreactors

**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<sup>2</sup>) data using R and linear modeling
- Implemented new method of protein binding pocket similarity scoring using MolSoft ICMScript
- Trained in mammalian tissue culture (HEK-293 cell line) in a BSL-2 environment

## 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, conversational in French
- Data analysis in Python & R
- Western blot, PCR, ELISA
- Mammalian cell culture
- Sterile technique at BSL-2
- Knows when to ask for help
- Driven by results and data
- Fast learner and curious