Willow Ross Carretero Chavez

☎ +1 (619) 832-5823 | ✉ carreter@mit.edu

Education

- **Massachusetts Institute of Technology** — Expected Graduation May 2024 — Cambridge, MA
  - Cumulative GPA — 4.6
  - Candidate for BS in Chemistry and Biology with Minor in Computer Science
  - Relevant Coursework: Fundamentals of Programming, Organic Chemistry I, Math for Computer Science, Principles of Chemical Science, Intro to Biology, Intro to Computer Science in Python, Single- and Multivariable Calculus
- **Mater Dei Catholic High School** — Graduated: May 2019 — Chula Vista, CA
  - GPA — 4.63 — Class Rank (10^{th}-12^{th}) — 1^{st}
  - AP Coursework (Score for all exams: 5) — Environmental Science, Chemistry, Calculus AB & BC, Physics C: Mechanics, Biology, English Literature, US History, US Gov & Politics
  - SAT — 1590 (800 Math/790 EBRW, $99+^{th}$ Percentile) — Math II: 800 — Chemistry: 800
  - Awards — National AP Scholar, California Mathematics Council Award, National Hispanic Recognition Program Scholar, National Honor Society Member

Work Experience

- **D.E. Shaw Research —** New York, NY
  Early College Intern: May 2021 — September 2021
  - Ran free energy perturbation (FEP) molecular dynamics simulations of ligand-receptor systems
  - Implemented several methods of charge neutralization for charge-changing FEP simulations
  - Improved existing FEP visualization and animation tools
- **Sinskey Lab @ Massachusetts Institute of Technology** — Cambridge, MA
  UROP Student Intern: February 2021–May 2021
  - Independently carried out cell culture maintenance on HEK 293 human cell lines
  - Performed cell counts and metabolite analysis of samples from Erbi and miniBio bioreactors
  - Carried out nanodrop, ddPCR, qPCR, BCA, and ELISA assays for DNA and protein quantification
- **Mathnasium of Mission Gorge** — Santee, CA
  Instructor: August 2019–April 2021
  - Taught students (2^{nd}-12^{th} grade) topics ranging from addition to single-variable calculus
  - Effectively leverages online teaching platforms to perform engaging remote instruction
- **Kufareva Lab @ UCSD Skaggs School of Pharmacy and Pharmaceutical Sciences** — La Jolla, CA
  Staff Research Associate: October 2019–December 2020
  Volunteer: July 2018–August 2018, February 2019–October 2019
  - Analyzed protein structure using the MolSoft ICM protein modeling suite, implementing a new method of protein binding pocket similarity scoring in ICMScript
  - Wrote toolkit to validate, process, and visualize Boolean models of cell signaling networks using Python and R; manuscript currently in preparation
  - Performed normalization, analysis, and visualization of TMT MS^2 phosphoproteomic data using R
  - Learned and performed tissue culture, PCR, and Gibson cloning protocols

Interests and Skills

- Bilingual — Native speaker of English and Spanish, conversational French knowledge
- Programming Languages — Python (NumPy), R, ICMScript, HTML5, CSS3, JavaScript (Node.js)
- Familiar with *nix and bash environments (Arch, Ubuntu/Debian)
- Hobbies: Hiking, backpacking, biking — whatever gets me out into nature!