SPENCER GUO

1369 East Hyde Park Blvd. Apt. 804
Chicago, IL 60615
+1 (920) 664–0288

scguo <at> uchicago.edu
spencercguo.github.io
linkedin.com/spencer-guo

EDUCATION

The University of Chicago, Chicago, IL — 9/2020 – present
Ph.D Candidate in Chemistry

Advisors: Prof. Aaron Dinner and Prof. Benoît Roux
Academic Interests: Theoretical and computational analysis of protein mechanisms, dynamics of voltage-gating and protein dissociation

Developing methods for computing kinetic and mechanistic statistics from MD
Investigating mechanism of voltage-dependent activation of a membrane protein and insulin dimer dissociation

Stanford University, Stanford, CA — 9/2016 – 6/2020
B.S. in Biological Chemistry, minor in Computer Science — GPA: 3.949

Relevant Coursework: Organic Chemistry, Physical Chemistry, Biochemistry, ODEs, PDEs, Computer Systems, Artificial Intelligence, Probability, Quantum Mechanics, Classical Mechanics, Statistical Mechanics

EXPERIENCE

Markland Lab — Undergraduate Research Assistant
Stanford University — 9/2018 – 6/2020
Simulated of IR spectra of bulk water using DFTB (density functional tight binding)
Benchmarked DFTB calculations against results from DFT
Investigated a neural network method to calculate molecular dipoles

Schrödinger — Python Development Intern
New York, NY — 6/2019 – 9/2019
Developed tool to identify critical residue/ligand interactions for drug development
Extended multiple sequence viewer (MSV) to analyze similarity at binding sites
Added ability to quickly visualize protein domains in MSV

Genentech — Protein Engineering Intern
South San Francisco, CA — 6/2018 – 9/2018
Synthesized novel peptide library for cellular assays (∼20 compounds)
Analyzed protein crystal structures to direct rational macrocycle design
Analyzed instrumental purity and spectral data (LC-MS, HPLC, NMR)

Chen Lab — Undergraduate Research Assistant
Stanford University — 2/2017 – 6/2018
Developed novel near-IR activated caged morpholinos (cMOs)
Designed and executed synthesis of cyanine dye-based probe
Presented work at Developmental Biology seminar

OTHER ACTIVITIES

Department of Chemistry — Teaching Assistant
University of Chicago — 9/2020 – 6/2021
Led weekly recitation sections, held office hours, and graded assignments for 3-quarter general chemistry sequence

Vice Provost for Teaching and Learning — Chemistry Tutor
9/2018 – 6/2020
Tutored general chemistry, organic chemistry, and biochemistry classes

Stanford Collaborative Orchestra — Co-Producer
Stanford University — 6/2017 – 6/2018
Organized over 25 rehearsals and 3 concerts with more than 100 attendees

Increased membership by 20% through coordinated recruitment efforts
Promoted collaborative musical environment

AWARDS

Dynamical analysis of the voltage-sensing domain in Ci-VSP 2021 – 2022
Anton 2 Supercomputer, Pittsburgh Supercomputing Center

NSF Graduate Research Fellowship 2020 – 2024

Eckhardt Fellowship 2020 – 2025
Physical Sciences Division, The University of Chicago

Stanford Department of Developmental Biology Grant 2017
Provided through the Vice Provost of Undergraduate Education ($7000). For development of a cyanine dye-based caged morpholino

POSTERS

Unsupervised Learning on scRNA-seq Data 12/2019
Final project for CS 221 (Artificial Intelligence). Analyzed single-cell RNA-sequencing data from zebrafish development to identify and reconstruct developmental states, trajectories, and cell types. Employed unsupervised learning methods including non-negative matrix factorization and latent Dirichlet allocation. Report available here.

Development of photoactivable morpholinos with greater dynamic and spectral range 8/2017
Sankha Pattanayak, Spencer C Guo, Sayumi Yamazoe, James K Chen. Presented at 2nd Northern California Fish Research Symposium.

SKILLS

PROGRAMMING: Python (NumPy/SciPy), Unix/Bash, C/C++, MATLAB, Java, LaTeX
SOFTWARE: GROMACS, Amber, PyMOL, VMD, CP2K, DFTB+, git
LANGUAGE: Spanish (proficient), French (proficient), Chinese (conversational)

INTERESTS

Cooking, classical music, piano, violin

Last updated December 8, 2021.