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, Chemistry
Academic Interests: Theory and simulation of biochemical systems using techniques from biophysics and statistical mechanics

Stanford University, Stanford, CA — 9/2016 – 6/2020
B.S., 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

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

NSF Graduate Research Fellowship 2020 – 2023

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. For development of a cyanine dye-based caged morpholino

PROJECTS

Theoretical and Biophysical Studies of the Insulin Dimer 7/2020 – 9/2020

Summer research project with Prof. Aaron Dinner at The University of Chicago. Performed molecular dynamics simulations of insulin to characterize dissociation of the dimer. Analyzed data using the framework of transition path theory and stochastic processes to calculate dynamical quantities and determine reaction mechanisms.

Unsupervised Learning on scRNA-seq Data 9/2019 – 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. Poster presented at 2nd Northern California Fish Research Symposium.

SKILLS

Programming: Python (NumPy/SciPy), Unix/Bash, C/C++, Matlab, Java, LaTeX

Software: GROMACS, PyMOL, VMD, CP2K, DFTB+, Git

Language: Spanish (proficient), French (proficient), Chinese (conversational)

INTERESTS

Cooking, classical music, piano, violin (previously a member of Stanford Collaborative Orchestra and Stanford Symphony Orchestra)

Last updated September 11, 2020.