SPENCER GUO

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EDUCATION

University of Chicago, Chicago, IL — 9/2020 –
Ph.D, Chemistry
ACADEMIC INTERESTS: Theory and simulation of biochemical systems using techniques from quantum 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, Vector Calculus, ODEs, PDEs, Computer Systems, Artificial Intelligence, Probability, Quantum Mechanics, Classical Mechanics

EXPERIENCE

Markland Lab — Undergraduate Research
Stanford University — 9/2018 – present
Simulated of IR spectra of bulk water using DFTB (density functional tight binding)
Benchmarked DFTB calculations against results from DFT (density functional theory)

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
Stanford University — 2/2017 – 6/2018
Developed novel tricyclic caged morpholinos (cMOs)
Designed and executed synthesis of cyanine dye-based probe
Presented undergraduate research at Developmental Biology seminar

OTHER ACTIVITIES

Vice Provost for Teaching and Learning — Chemistry Tutor
9/2018 – present
Tutored for 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

Stanford Health Advocacy and Research in the ED — Volunteer
1/2017 – 6/2018
Screened >100 urgent care patients for risky alcohol behaviors
Managed legal, housing, immigration needs for >50 at-risk patients

PROJECTS

Unsupervised Learning on scRNA-seq Data 9/2019
Analyzed single-cell RNA-sequencing data from zebrafish development to identify and reconstruct developmental states, trajectories, and cell types using artificial intelligence techniques including non-negative matrix factorization and latent Dirichlet allocation. Report available here.

POSTERS

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

AWARDS

NSF Graduate Research Fellowship 2020 – 2023
University of Chicago Eckhardt Fellowship 2020 – 2025
Stanford VPUE, Department of Developmental Biology 2017
Grant for research on zebrafish development using a cyanine dye-based caged morpholino

SKILLS

Programming: Python (NumPy/SciPy), Unix/Bash, C/C++, Matlab, Java, LaTeX
Software: GROMACS, PyMOL, VMD, CP2K, DFTB+
Language: Spanish (proficient), French (proficient), Chinese (conversational)

INTERESTS

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

Last updated July 22, 2020.