

Spencer Guo

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EDUCATION

PH.D. CHEMISTRY, **The University of Chicago** 9/2020 – present
Supervisors: Profs. Aaron Dinner and Benoît Roux (expected graduation: 6/2025)
Research interests: theoretical and computational analysis of protein mechanisms, dynamics of voltage-gating and protein dissociation, machine-learning methods for protein kinetics

M.S. CHEMISTRY, **The University of Chicago** 9/2020 – 9/2021

B.S. BIOLOGICAL CHEMISTRY, **Stanford University** 9/2016 – 6/2020
Minor in Computer Science GPA: 3.95

PUBLICATIONS & PREPRINTS

* Denotes equal contribution.

1. N. Zhang*, D. Sood*, S. Guo*, N. Chen, A. Antoszewski, T. Marianchuk, A. Chavan, S. Dey, Y. Xiao, L. Hong, X. Peng, M. Baxa, C. Partch, T. Sosnick, L. P. Wang, A. R. Dinner, & A. LiWang. Temperature-Dependent Fold-Switching Mechanism of the Circadian Clock Protein KaiB. [bioRxiv:10.1101/2024.05.21.594594](https://doi.org/10.1101/2024.05.21.594594).
2. S. Guo, R. Shen, B. Roux, & A. R. Dinner. Dynamics of activation in the voltage-sensing domain of *Ciona intestinalis* phosphatase Ci-VSP. *Nat. Commun.* **15**, 1408 (2024).
3. C. Lorpai boon, S. Guo, J. Strahan, J. Weare, & A. R. Dinner. Accurate estimates of dynamical statistics using memory. *J. Chem. Phys.* **160**, 084108 (2024).
4. J. Strahan, S. Guo, A. R. Dinner, & J. Weare. Inexact iterative numerical linear algebra for neural network-based spectral estimation and rare-event prediction. *J. Chem. Phys.* **159**, 014110 (2023).

PROFESSIONAL & SERVICE EXPERIENCE

Physical Sciences Division Social Committee President
The University of Chicago 2/2023 – 2/2024
Facilitate and stimulate social event planning for graduate students in physical sciences
Manage a >\$100,000 budget and allocate for events

Modern Materials and Technology Volunteer
The University of Chicago 9/2021 – present
Teach a weekly colloquium to ~15 high school students in Chicago
Create lesson plans demonstrating applications of chemistry and physics to modern technology

Physical Sciences Division Dean's Student Advisory Committee
The University of Chicago 9/2022 – 6/2023
Served as chemistry representative student for cross-department committee
Discussed student policies at weekly meetings and organize feedback from students

Department of Chemistry Director of Graduate Student Initiatives
The University of Chicago 7/2022 – 6/2023
Served as liaison between graduate students and faculty to increase open communication
Developed policies to alleviate student concerns and help their transition to graduate school
Managed a \$15,000 budget and organize quarterly events

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

PRESENTATIONS

Invited lecture at **Associated International Laboratory (CNRS/UIUC)**, *Hauteluce, France* 1/2024
Poster at **AI & Science Summer School 2023**, *Chicago, IL* 7/2023
Poster at **Biophysical Society Annual Meeting**, *San Francisco, CA* 2/2022

AWARDS & GRANTS

St. Jude National Graduate Student Symposium, *St. Jude Children's Hospital* 2024
Anton 2, *Pittsburgh Supercomputing Center* 2021
NSF Graduate Research Fellowship, *National Science Foundation* 2020
Eckhardt Fellowship, *Physical Sciences Division, The University of Chicago* 2020
Department of Developmental Biology Undergraduate Grant, *Stanford University* 2017

UNDERGRADUATE EXPERIENCE

Markland Lab Undergraduate Research Assistant
Stanford University 9/2018 – 6/2020

Simulated IR spectra of liquid water using semi-empirical methods
Benchmarked semi-empirical calculations against results from DFT
Adapted 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
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

TECHNICAL SKILLS

PROGRAMMING (*experienced*) Python (NumPy/SciPy), Jax, PyTorch, bash, L^AT_EX
(*familiar*) C/C++, MATLAB, git
SOFTWARE (*experienced*) GROMACS, Amber, OpenMM, VMD
(*familiar*) PyMOL, CP2K, DFTB+

INTERESTS

Cooking, classical music, piano, violin

Last updated May 29, 2024.