Rosalind Pan

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EDUCATION

California Institute of Technology Expected, 2028
Ph.D in Biochemistry and Molecular Biophysics *Pasadena, CA*
Cumulative GPA: 3.90/4.00

The University of Chicago June, 2022
B.S. *summa cum laude* in Biology & Computational and Applied Mathematics *Chicago, IL*
Cumulative GPA: 3.97/4.00
Thesis: "Evolutionary analysis of unalignable protein sequences"

EXPERIENCE

California Institute of Technology June 2022 - Present
Graduate Researcher, Rob Phillips Group *Pasadena, CA*

- Build thermodynamic models to model transcriptional regulation in microbial organisms
- Map transcription factors to corresponding regulatory regions using gene knockout and RNA sequencing

The University of Chicago October 2019 – June 2022
Undergraduate Researcher, D. Allan Drummond Laboratory *Chicago, IL*

- Research sequence-function relationships of low-complexity regions through alignment-free evolutionary analysis
- Develop computational methods to quantify sequence conservation and identify signatures of selection
- Perform biochemical and biophysical assays to investigate the effects of perturbing evolutionarily conserved sequence features in low-complexity regions
- Carried out proteome-wide conservation analysis of highly charged protein regions

The Marine Biological Laboratory June – August 2019
Undergraduate Researcher, Joshua Rosenthal Laboratory *Woods Hole, MA*

- Researched a new system of site-directed RNA editing that uses the bacterial enzyme TadA
- Designed and purified recombinant TadA-based enzymes and novel RNA substrates
- Carried out in cellula and in vitro editing assays using the TadA editing system

The University of Chicago February – June 2019
Undergraduate Researcher, Margaret Gardel Laboratory *Chicago, IL*

- Studied the dynamics and regulation of three-dimensional cell shape in epithelial tissues
- Imaged live cells on collagen gel using confocal fluorescence microscopy
- Performed computational analysis of time-lapse microscopy images

PUBLICATIONS

[4] Tom Röschinger, Heun Jin Lee, **Rosalind W. Pan**, Grace Solini, Kian Faizi, Baiyi Quan, Tsui Fen Chou, Madhav Mani, Stephen Quake, Rob Phillips. 2025. **The Environment-Dependent Regulatory Landscape of the *E. coli* Genome.** arXiv. https://doi.org/10.48550/arXiv.2505.08764.

[3] **Rosalind W. Pan**, Tom Röschinger, Kian Faizi, and Rob Phillips. 2024. **Dissecting Endogeneous Genetic Circuits from First Principles.** PLOS Computational Biology 20(12): e1012697. https://doi.org/10.1371/journal.pcbi.1012697.

[2] Shichen Liu, **Rosalind W. Pan**, Heun Jin Lee, Shahriar Shadkhoo, Fan Yang, Chunhe Li, Zijie Qu, and Matt Thomson. 2024. **Force Propagation in Active Cytoskeletal Networks.** arXiv [cond-Mat.soft]. http://arxiv.org/abs/2401.04217.

[1] Cat Triandafillou*, **Rosalind W. Pan***, Aaron Dinner, D. Allan Drummond (*contributed equally). 2023. **Pervasive, conserved secondary structure in highly charged protein regions.** PLOS Computational Biology 19(10): e1011565. https://doi.org/10.1371/journal.pcbi.1011565.

PRESENTATIONS

[10]"Deciphering regulatory architectures of microbial genomes from synthetic expression patterns." APS Global Physics Submit, Mar 16-21, 2025. Anaheim, CA. **Oral presentation**.

[9]"Dissecting endogeneous genetic circuits from first principles." 11th Annual Winter q-bio meeting, Feb 19-23, 2024. O'ahu, HI. **Oral and poster presentation**.

[8]"Dissecting endogeneous genetic circuits from first principles." Mechanisms of Microbial Transcription Gordon Research Conference, June 11-16, 2023. Hooksett, NH. **Poster presentation**.

[7] "Dissecting endogeneous genetic circuits from first principles." Mechanisms of Microbial Transcription Gordon Research Seminar, June 10-11, 2023. Hooksett, NH. **Oral and poster presentation**.

[6] "Alignment-free evolutionary analysis of unalignable protein sequences." Chicago Area Undergraduate Research Symposium, April 10, 2021. Remote. **Poster presentation; *won Top Poster in Biological Sciences***.

[5] "Alignment-free evolutionary analysis of unalignable protein sequences." UChicago Computational and Applied Mathematics Student Seminar, February 23, 2021. Remote. **Oral presentation**.

[4] "Alignment-free evolutionary analysis of unalignable protein sequences." 26th Annual Midwest Stress Response and Molecular Chaperone Virtual Meeting, January 16, 2021. Remote. **Poster presentation**.

[3] "Quantifying natural selection in the low-complexity regions of poly(A)-binding proteins." Midstates Consortium for Math and Science Undergraduate Research Symposium in the Biological Sciences and Psychology, October 31, 2020. Remote. **Oral presentation**.

[2] "Site-Directed RNA Editing Using TadAs." UChicago Careers in STEM 6th Annual Undergraduate Research Symposium, October 11, 2019. Chicago, IL. **Poster presentation**.

[1] "Site-Directed RNA Editing Using TadAs." Marine Biological Laboratory Undergraduate Poster Session, August 15, 2019. Woods Hole, MA. **Poster presentation**.

TEACHING

Bi 1: The Great Ideas of Biology April – June 2023, April – June 2024, April – June 2025
Head Teaching Assistant *Pasadena, CA*

- Led computational tutorials, weekly recitations, and office hours
- Prepared and graded homework assignments

BIOS 26120: An Introduction to Bioinformatics and Proteomics September – December 2021
Teaching Assistant *Chicago, IL*

- Led weekly computer lab sessions and graded coding assignments

HONORS AND AWARDS

UChicago Quantitative Biology Summer Fellowship	2021
Enrico Fermi Scholar, UChicago Physical Sciences Collegiate Divisional Honors	2021
Janet Rowley Scholar, UChicago Biological Sciences Collegiate Divisional Honors	2021
Elected to UChicago Beta of Illinois Chapter of Phi Beta Kappa	2021
Liew Family College Research Fellows Fund	2021
UChicago Robert Maynard Hutchins Scholar	2020
UChicago Biological Sciences Collegiate Division Summer Research Fellowship	2020
Jeff Metcalf Summer for Undergraduate Research Fellowship	2019
Chicago Materials Research Center Research Exploration Fellowship	2019

SKILLS

Software	Python, R, bash, Adobe Illustrator, LaTeX
Wet Lab	Molecular cloning, RNA-Seq, cell culture, optical microscopy