# Xiangting Li

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## Education

2020-Present PH.D. (EXPECTED) IN COMPUTATIONAL MEDICINE, UCLA
*Dissertation Title*: "Stochastic Models of Cellular Processes: Molecular Interactions, Information, and Evolution"
*Advisor*: Tom Chou

2023-06-13 DOCTORAL ADVANCEMENT TO CANDIDACY, UCLA

2023-03-24 MASTER OF SCIENCE IN BIOMATHEMATICS, UCLA

2020 BACHELOR IN INTEGRATED SCIENCE, Peking University, Beijing, China

## Research Areas

Stochastic processes, DNA-protein interactions, multiscale analysis, nonequilibrium statistical physics.

## Skills

**Analysis**: stochastic analysis, matrix analysis, eigenvalue analysis, perturbation theory, first-passage time calculation, dynamical systems, equilibrium and nonequilibrium statistical physics, differential manifolds.
**Numerics**: stochastic simulation, Monte Carlo methods, spectral methods, numerical linear algebra, numerical optimization, neural ODEs, neural SDEs, statistical inference.
**Programming Languages**: Python, Julia, MATLAB, LaTeX.

## Publications

### PREPRINTS

2024 **Xiangting Li**, Tom Chou, "Reliable ligand discrimination in stochastic multistep kinetic proofreading: First passage time vs. product counting strategies," *arXiv:2402.04547* (2024). Accepted by *PLoS Computational Biology*.

2024 Mingtao Xia, **Xiangting Li**, Qijing Shen, Tom Chou, "Squared Wasserstein-2 Distance for Efficient Reconstruction of Stochastic Differential Equations," *arXiv:2401.11354* (2024).

2023 Mingtao Xia, **Xiangting Li**, Qijing Shen, Tom Chou, "A Spectral Approach for Learning Spatiotemporal Neural Differential Equations," *arXiv:2309.16131* (2023). Accpeted by *Journal of Applied Mathematics and Computing*.

2023 Mingtao Xia, **Xiangting Li**, Tom Chou, "Population overcompensation, transients, and oscillations in age-structured Lotka-Volterra models," *arXiv:2303.00864* (2023).

### Published Work

2023 **Xiangting Li**, Tom Chou, "Stochastic nucleosome disassembly mediated by remodelers and histone fragmentation," *Journal of Chemical Physics* 159.20 (2023).

2023 **Xiangting Li**, Sara Habibipour, Tom Chou, Otto O. Yang, "The role of APOBEC3-induced mutations in the differential evolution of monkeypox virus," *Virus Evolution* 9.2 (2023): vead058.

2023 Jiawei Ding*, **Xiangting Li***, Jiangchuan Shen, Yiling Zhao, Shuchen Zhong, Luhua Lai, Hengyao Niu, and Zhi Qi, "ssDNA accessibility of Rad51 is regulated by orchestrating multiple RPA dynamics," *Nature Communications* 14.1 (2023): 3864.

2023 **Xiangting Li**, Tom Chou, "Stochastic dynamics and ribosome-RNAP interactions in transcription-translation coupling," *Biophysical Journal* 122.1 (2023): 254-266.

## Talks

2024-03-07 APS March Meeting 2024 (W38.00009), Stochastic nucleosome disassembly mediated by remodelers and histone fragmentation, Minneapolis, Minnesota.

2024-01-03 JMM 2024 (AMS Special Session on Mathematics of DNA and RNA), The role of APOBEC3-induced mutations in the differential evolution of monkeypox virus, San Francisco, California.

2023-10-10 ICSB 2023 (Dyn. 15), Population overcompensation, transients, and oscillations in age-structured Lotka-Volterra models, Hartford, Connecticut.

2023-03-06 APS March Meeting 2023 (D08.00003), Stochastic dynamics and ribosome-RNAP interactions in Transcription-Translation Coupling, Las Vegas, Nevada.

## Teaching

2024 spring Teaching Assistant, Computational & Systems Biology 150: "Biological Modeling: Mathematical and Computational Approaches"

## Awards & Honors

2021–2023 University felloship at UCLA
2020 Peking University Weiming Scholar
2016 Peking University Freshman Scholarship

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