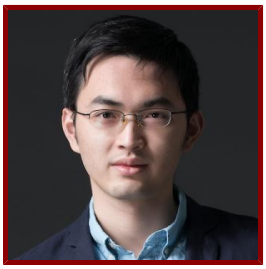
Stanford



Lei Xiong

Postdoctoral Scholar, Genetics

Bio

BIO

My research interests lie in the development and application of innovative deep learning approaches to address complex biological questions. I am primarily focused on large-scale genomics data (e.g. single-cell, spatial genomics, genetic perturbation, genetics and epigenetics). To achieve this, I build models that effectively capture and interpret complex features behind the data, providing new insights into fundamental biological processes and mechanisms. Through my work, I aim to drive significant advances in the field of computational genomics, contributing to a better understanding of human health and disease.

HONORS AND AWARDS

- Outstanding Doctoral Dissertation, Tsinghua University (2020)
- Outstanding Graduate of Beijing, Beijing Municipal Commission of Education (2020)
- Outstanding Fellowship, Beijing Advanced Innovation Center of Structure Biology, Tsinghua University (2019)
- Top 10 Advances of Bioinformatics in China, Genomics, Proteomics & Bioinformatics (2019)
- Top 10 Algorithms and Tools for Bioinformatics in China, Genomics, Proteomics & Bioinformatics (2019)
- Innovation Fellowship, Beijing Advanced Innovation Center of Structure Biology, Tsinghua University (2016)
- Gold Medal, International Genetically Engineered Machine (2013)
- Student Scholarship, University of Science and Technology of China (2013)
- Student Scholarship, University of Science and Technology of China (2012)
- Freshman Scholarship, University of Science and Technology of China (2011)

PROFESSIONAL EDUCATION

- Postdoctoral Scholar, Stanford University , Genetics (2024)
- Postdoctoral Associate, MIT , Computer Science & Artificial Intelligence Laboratory (2021)
- Doctor of Philosophy, Tsinghua University , Computational Biolgoy (2020)
- Bachelor of Science, Universtiy of Science and Technology of China , Biology (2015)

STANFORD ADVISORS

- Anshul Kundaje, Postdoctoral Faculty Sponsor

LINKS

- My website: https://www.xiong-lei.com
- Github: https://github.com/jsxlei

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research focuses on develop deep learning methods to

1. Infer macrophage-tumor cells interaction using spatial multi-omics

2. Decipher the cis-regulatory code using a large language models

3. Predict enhancer-promoter interaction

4. Multi-omics integration

5. Build foundational model for single-cell genomics

Publications

PUBLICATIONS

- **scCLIP: Multi-modal Single-cell Contrastive Learning Integration Pre-training**
  Xiong, L., Chen, T., Kellis, M.
  2023

- **Online single-cell data integration through projecting heterogeneous datasets into a common cell-embedding space.** *Nature communications*
  Xiong, L., Tian, K., Li, Y., Ning, W., Gao, X., Zhang, Q. C.
  2022; 13 (1): 6118

- **SCALE method for single-cell ATAC-seq analysis via latent feature extraction.** *Nature communications*
  Xiong, L., Xu, K., Tian, K., Shao, Y., Tang, L., Gao, G., Zhang, M., Jiang, T., Zhang, Q. C.
  2019; 10 (1): 4576

- **Tissue-specific silencing of integrated transgenes achieved through endogenous RNA interference inCaenorhabditis elegans.** *RNA biology*
  Chen, S., Liu, W., Xiong, L., Tao, Z., Zhao, D.
  2024; 21 (1): 1-10

- **CD127 imprints functional heterogeneity to diversify monocyte responses in inflammatory diseases.** *The Journal of experimental medicine*
  Zhang, B., Zhang, Y., Xiong, L., Li, Y., Zhang, Y., Zhao, J., Jiang, H., Li, C., Liu, Y., Liu, X., Liu, H., Ping, Y. F., Zhang, et al
  2022; 219 (2)

- **Molecular basis of ligand recognition and transport by glucose transporters.** *Nature*
  Deng, D., Sun, P., Yan, C., Ke, M., Jiang, X., Xiong, L., Ren, W., Hirata, K., Yamamoto, M., Fan, S., Yan, N.
  2015; 526 (7573): 391-6