Fangming Xie

Ph.D. student in Physics
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Education

2016 -	Ph.D. in Physics *University of California San Diego*
2012 - 2016	B.S. in Physics *University of Science and Technology of China*

Research Experience

2017 -	**Ph.D. research in neuroscience and epigenetics** *University of California San Diego* Thesis: Integrative analysis of brain cell type transcriptomes and epigenomes. Advisor: Eran A. Mukamel
2014 - 2016	**Research assistant in condensed matter physics and materials science** *University of Science and Technology of China* First principles numerical analysis of two-dimensional van der Waals materials. Advisors: Wenguang Zhu, Jie Zeng
2015	**Research assistant in biophysics** *University of California Los Angeles* Computational modeling of melting transition in viral capsid assembly. Advisors: Sanjay Dharmavaram, William S. Klug, Robijn F. Bruinsma
2014	**Research assistant in condensed matter physics** *University of Michigan Ann Arbor* Computational modeling of opto-mechanical properties of a photonic crystal membrane. Advisor: Hui Deng

Teaching Experience

2020	Tutor, "AP Calculus", San Diego Tutor Tree (remote tutoring during COVID)
2019	Instructor, the Young Scientist Club (preschool outreach)
2016 - 2019	Teaching assistant, "Modeling & Data Analysis", "Neural Signal Processing", "General Physics (Mechanics)", "Physics Lab (Mechanics)" "Physics Lab (Wave, Optical, and Modern Physics)", University of California, San Diego

Professional Associations

2018 -   Member, *BRAIN Initiative Cell Census Network*

2017 -   Member, *Society for Neuroscience*

Publications

(<u>*These authors contributed equally to this work.</u>)

Research papers

<u>Yao*, Z., Liu*, H., **Xie*, F.**, Fischer*, S.</u>, Adkins, R. S., Aldridge, A. I., Ament, S. A., Bartlett, A., Behrens, M. M., Van den Berge, K., Bertagnolli, D., de Bézieux, H. R., Biancalani, T., Booeshaghi, A. S., Bravo, H. C., Casper, T., Colantuoni, C., Crabtree, J., Creasy, H., … Mukamel, E. A. (2021). A transcriptomic and epigenomic cell atlas of the mouse primary motor cortex. *Nature*, 598(7879), 103–110.

BRAIN Initiative Cell Census Network (BICCN). (2021). A multimodal cell census and atlas of the mammalian primary motor cortex. *Nature*, 598(7879), 86–102.
(A paper with >300 co-authors. My analysis results go into several main figures.)

Bakken, T. E., Jorstad, N. L., Hu, Q., Lake, B. B., Tian, W., Kalmbach, B. E., Crow, M., Hodge, R. D., Krienen, F. M., Sorensen, S. A., Eggermont, J., Yao, Z., Aevermann, B. D., Aldridge, A. I., Bartlett, A., Bertagnolli, D., Casper, T., Castanon, R. G., Crichton, K., …, **Xie, F.**, …, Lein, E. S. (2021). Comparative cellular analysis of motor cortex in human, marmoset and mouse. *Nature*, 598(7879), 111–119.

Fang, R., Preissl, S., Li, Y., Hou, X., Lucero, J., Wang, X., Motamedi, A., Shiau, A. K., Zhou, X., **Xie, F.**, Mukamel, E. A., Zhang, K., Zhang, Y., Behrens, M. M., Ecker, J. R., & Ren, B. (2021). Comprehensive analysis of single cell ATAC-seq data with SnapATAC. *Nature Communications*, 12(1), 1337.

Dharmavaram, S., **Xie, F.**, Klug, W., Rudnick, J., & Bruinsma, R. (2017). Orientational phase transitions and the assembly of viral capsids. *Physical Review. E*, 95(6-1), 062402.

Dharmavaram, S., **Xie, F.**, Klug, W., Rudnick, J., & Bruinsma, R. (2016). Landau theory and the emergence of chirality in viral capsids. *EPL*, 116(2), 26002.

Nan, F., **Xie, F.-M.**, Liang, S., Ma, L., Yang, D.-J., Liu, X.-L., Wang, J.-H., Cheng, Z.-Q., Yu, X.-F., Zhou, L., Wang, Q.-Q., & Zeng, J. (2016). Growth of metal-semiconductor core-multishell nanorods with optimized field confinement and nonlinear enhancement. *Nanoscale*, 8(23), 11969–11975.

Review papers

<u>Armand*, E. J., Li*, J., **Xie*, F.**</u>, Luo, C., & Mukamel, E. A. (2021). Single-Cell Sequencing of Brain Cell Transcriptomes and Epigenomes. *Neuron*, 109(1), 11–26.

Research preprints

Xie*, F., Armand, E. J., Yao, Z., Liu, H., Bartlett, A., Margarita Behrens, M., Li, Y. E., Lucero, J. D., Luo, C., Nery, J. R., Pinto-Duarte, A., Poirion, O., Preissl, S., Rivkin, A. C., Tasic, B., Zeng, H., Ren, B., Ecker, J. R., & Mukamel, E. A. (2021). Robust enhancer-gene regulation identified by single-cell transcriptomes and epigenomes. *In bioRxiv* (p. 2021.10.25.465795).

Luo*, C., Liu*, H., **Xie*, F.**, Armand, E. J., Siletti, K., Bakken, T., Fang, R., Doyle, W. I., Hodge, R. D., Hu, L., Wang, B.-A., Zhang, Z., Preissl, S., Lee, D.-S., Zhou, J., Niu, S.-Y., Castanon, R., Bartlett, A., Rivkin, A., … Ecker, J. R. (2019). Single nucleus multi-omics links human cortical cell regulatory genome diversity to disease risk variants. *In bioRxiv* (p. 2019.12.11.873398).

Software

SingleCellFusion: https://github.com/mukamel-lab/SingleCellFusion
A computational tool that integrates disparate single-cell transcriptome and epigenome datasets.