Chang Su

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Employment

2023-   Assistant Professor, Department of Biostatistics and Bioinformatics, Emory University

Education

2018-2023   Ph.D., Biostatistics, Yale University
              Advisors: Hongyu Zhao and Zhou Fan

2014-2018   B.S., Statistics, Sun Yat-sen University

Research Interests

Topics: Gene networks, Gene regulation, Quantitative trait loci mapping, Transcriptome-wide association studies, Confounder adjustment

Fields: Statistical methods for single cell genomics and genetics

Publications

[1] **Chang Su**, Jingfei Zhang, Hongyu Zhao (2024). Estimating cell-type-specific gene co-expression networks from bulk gene expression data with an application to Alzheimer's disease. *Journal of the American Statistical Association, forthcoming.* [preprint] [code] [R package]

[2] **Chang Su**, Zichun Xu, Xinning Shan, Biao Cai, Hongyu Zhao, Jingfei Zhang (2023). Cell-type-specific co-expression inference from single cell RNA-sequencing data. *Nature Communications 14.1 (2023): 4846.* [paper] [R package] [Python package]

[3] Hussain Bukhari*, **Chang Su***, Elvisha Dhamala, Zijin Gu, Keith Jamison, Amy Kuceyeski (2023). A graph-matching based metric of functional connectome distance between pairs of individuals varies with their ages, cognitive performances and familial relationships. *Human Brain Mapping.* [paper]
*: equal contribution

[4] Xinyi Zhong*, **Chang Su***, Zhou Fan (2022). Empirical Bayes PCA in high dimensions. *Journal of the Royal Statistical Society: Series B (Statistical Methodology), 84(3), 853– 878.* [paper] [software]
*: equal contribution

Under Review

[5] Biao Cai, Jingfei Zhang, Hongyu Li, **Chang Su** and Hongyu Zhao (2022). Statistical inference of cell-type proportions estimated from bulk expression data. [preprint]

[6] Le Zhang, Chuan Hua He, Sarah Coffey, Dominic Yin, I-Uen Hsu, **Chang Su**, Yixuan Ye, Chi Zhang, Joshua Spurrier, LaShae Nicholson, Carla V Rothlin, Sourav Ghosh, Pallavi P Gopal, David A Hafler, Hongyu Zhao, Stephen M Strittmatter (2023). Single-cell transcriptomic atlas of Alzheimer's disease middle temporal gyrus reveals region, cell type and sex specificity of gene expression with novel genetic risk for MERTK in female. [preprint]

[7] Biqing Zhu, Jae-Min Park, Sarah Coffey, I-Uen Hsu, TuKiet T Lam, Pallavi P Gopal, Stephen D Ginsberg, Jiawei Wang, **Chang Su**, Hongyu Zhao, David A Hafler, Sreeganga S Chandra, Le Zhang (2022). Single-cell transcriptomic and proteomic analysis of Parkinson's disease brains. [preprint]

Invited Talks and Presentations

[†] *Indicates scheduled*

2024	STATGEN 2024: Conference on Statistics in Genomics and Genetics, Pittsburgh, PA [†]
2023	Biology of Genomes, Cold Spring Harbor
	Cell-type-specific co-expression inference with single cell RNA sequencing data.
2022	American Society of Human Genetics, Los Angeles, CA
	CS-CORE: cell-type-specific co-expression inference with single cell RNA sequencing data.
2022	Join Statistical Meeting, Washington DC
	Estimating cell-type-specific gene co-expression networks from bulk gene expression data with an application to Alzheimer's disease.
2022	ENAR, Houston, TX
	Estimating cell-type-specific gene co-expressions from bulk RNA-seq data.

Teaching

Instructor

2023 Fall	BIOS 590 & 790: Seminar in Biostatistics, Emory University
2023 Fall	BIOS 516: Introduction to Large-scale Biomedical Data Analysis (Guest lecture), Emory University

Mentorship

2023-	Xinyue Hou, Emory Rollins School of Public Health (MPH in Biostatistics)
2023-	Jessica Chan, Emory Rollins School of Public Health (MSPH in Biostatistics)

2022-2023	Zichun Xu, Yale School of Public Health (M.S. in Biostatistics)
2022-2023	Xinning Shan, Yale School of Public Health (M.S. in Biostatistics)
2022-2023	Karen Li, Yale School of Public Health (M.S. in Biostatistics)
2022-2023	Xinyi Chen, University of Toronto (B.S. in Statistics and Computer Science)

Teaching Fellow

2019 Fall	BIS 557: Computational Statistics, Yale University
2020 Spring	S&DS 240: An Introduction to Probability Theory, Yale University
2020 Summar	BIS 515: Accelerated Biostatisics, Yale University

Grants

2023-	R01GM141074 (Hu), co-I, three calendar months

Honors and Awards

2023	JXTX + CSHL Biology of Genomes Scholarship
2023	YSPH Conference Fund Travel Award, Yale School of Public Health
2022,2023	Graduate Student Assembly Conference Travel Fellowship Award, Yale Graduate School of Arts and Sciences
2018	Distinguished Graduate of Sun Yat-sen University
2017	National Scholarship (top 1%)

Professional Services & Activities

Committee

2023-2024	Co-chair, MidSouth Computational Biology and Bioinformatics Society (MCBIOS) Annual Conference
2023-2024	Departmental seminar, Department of Biostatistics and Bioinformatics, Emory University
2023-	Computation and Data Science Advisory Group, Emory Rollins School of Public Health

Referee Services

Bioinformatics, PLOS Computational Biology, Journal of Genetics and Genomics, IEEE/ACM Transactions on Computational Biology and Bioinformatics, NAR Genomics and Bioinformatics

Academic Experience

2018 Summer   Visiting student, Hong Kong University of Science and Technology

Industry Experience

2022 Summer   Research scientist intern, Meta