

# Yan Dora Zhang

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## ACADEMIC POSITIONS

- 2019– **Assistant Professor**  
Department of Statistics and Actuarial Science  
School of Computing and Data Science  
The University of Hong Kong
- 2016–2019 **Postdoctoral Fellow** (Mentor: [Dr. Nilanjan Chatterjee](#))  
Department of Biostatistics  
Bloomberg School of Public Health  
Johns Hopkins University

## EDUCATION

- 2013–2016 **Ph.D. in Statistics**, North Carolina State University, *NC, USA*  
Thesis: *Bayesian Methods for High-dimensional Data*  
Advisor: [Dr. Howard D. Bondell](#) & [Dr. Brian J. Reich](#)
- 2011–2013 **M.S. in Statistics**, North Carolina State University, *NC, USA*
- 2007–2011 **B.S. in Statistics**, Nankai University, *Tianjin, China*

## PUBLICATIONS

(\*Co-first authors. <sup>†</sup>Co-corresponding authors. Students/supervisees are underlined.)

### Peer-Reviewed Articles (as first/corresponding author)

1. Lai D, Wang H, Gu T, Wu S, Liu D, Sham PC, **Zhang YD**. TransferTWAS: A transfer learning framework for cross-tissue transcriptome-wide association study. *The American Journal of Human Genetics*. 2025 Aug 7;112(8):1936-47.
2. Wang X, Wang M, Wang H, Yin G, **Zhang YD**. Drug repurposing for Alzheimer's disease integrating transcriptome-wide association study and biological network analysis. *Journal of Alzheimer's Disease*. 2025 July 22.

3. Wang H, Li X, Li T, Li Z, Sham PC, **Zhang YD**. MAAT: a new nonparametric Bayesian framework for incorporating multiple functional annotations in transcriptome-wide association studies. *Genome Biology*. 2025 Feb 4;26:21.
4. Wang A\*, Tian P\*, **Zhang YD**. TWAS-GKF: a novel method for causal gene identification in transcriptome-wide association studies with knockoff inference. *Bioinformatics*. 2024 Aug;40(8):btae502.
5. Xiong Z, Thach TQ, **Zhang YD**<sup>†</sup>, Sham PC<sup>†</sup>. Improved estimation of functional enrichment in SNP heritability using feasible generalized least squares. *Human Genetics and Genomics Advances*. 2024 Apr 11;5(2).
6. Lai D, Lim D, Lu J, Wang H, Huang T, **Zhang YD**. Risk of myocarditis after three doses of COVID-19 mRNA vaccines in the United States, 2020–2022: A self-controlled case series study. *Journal of Evidence-Based Medicine*. 2024 Mar;17(1):65-77.
7. Li X, Sham PC, **Zhang YD**. A Bayesian fine-mapping model using a continuous global-local shrinkage prior with applications in prostate cancer analysis. *The American Journal of Human Genetics*. 2024 Feb 1;111(2):213-26.
8. Wang X, Wang H, Yin G, **Zhang YD**. Network-based drug repurposing for the treatment of COVID-19 patients in different clinical stages. *Heliyon*. 2023 Mar 1;9(3).
9. Liu Z\*, Qin Y\*, Wu T, Tubbs JD, Baum L, Mak TS, Li M<sup>†</sup>, Zhang YD<sup>†</sup>, Sham PC.<sup>†</sup> Reciprocal causation mixture model for robust Mendelian randomization analysis using genome-scale summary data. *Nature Communications*. 2023 Feb 28;14(1):1131.
10. Tian P, Hu Y, Liu Z<sup>†</sup>, **Zhang YD**<sup>†</sup>. Grace-AKO: a novel and stable knockoff filter for variable selection incorporating gene network structures. *BMC bioinformatics*. 2022 Nov 14;23(1):478.
11. Wang H, Wang X, Li T, Lai D, **Zhang YD**. Adverse effect signature extraction and prediction for drugs treating COVID-19. *Frontiers in Genetics*. 2022 Nov 4;13:1019940.
12. Gan D, Yin G, **Zhang YD**. The GR2D2 estimator for the precision matrices. *Briefings in Bioinformatics*. 2022 Nov;23(6):bbac426.
13. Tian P, Chan TH, Wang YF, Yang W, Yin G, **Zhang YD**. Multiethnic polygenic risk prediction in diverse populations through transfer learning. *Frontiers in Genetics*. 2022 Aug 19;13:906965.
14. **Zhang YD**, Naughton BP, Bondell HD, Reich BJ. Bayesian regression using a prior on the model fit: The R2-D2 shrinkage prior. *Journal of the American Statistical Association*. 2022 Apr 3;117(538):862-74.
15. Lai D, Cai Y, Chan TH, Gan D, Hurson AN, **Zhang YD**. How to organise travel restrictions in the new future: lessons from the COVID-19 response in Hong Kong and Singapore.

*BMJ global health*. 2022 Feb 28;7(2).

16. **Zhang YD**, Hurson AN, Zhang H, Choudhury PP, Easton DF, Milne RL, Simard J, Hall P, Michailidou K, Dennis J, Schmidt MK, ..., Chatterjee N<sup>†</sup>, García-Closas M<sup>†</sup>. Assessment of polygenic architecture and risk prediction based on common variants across fourteen cancers. *Nature communications*. 2020 Jul 3;11(1):3353.
17. **Zhang Y**, Qi G, Park JH, Chatterjee N. Estimation of complex effect-size distributions using summary-level statistics from genome-wide association studies across 32 complex traits. *Nature genetics*. 2018 Sep;50(9):1318-26.
18. **Zhang Y**, Bondell HD. Variable selection via penalized credible regions with Dirichlet–Laplace global-local shrinkage priors. *Bayesian Analysis*. 2018 Sep;13(3):823-844.

### Peer-Reviewed Articles (as co-author)

19. Chan TH, **Zhang DY**, Yin G, Yu L. Feature Preserving Shrinkage on Bayesian Neural Networks via the R2D2 Prior. *IEEE Transactions on Pattern Analysis and Machine Intelligence*. 2025 May 23.
20. Wang W, Jin H, **Zhang YD**, Yin G. Two-dimensional calibration-free odds design for phase I drug-combination trials. *Frontiers in Oncology*. 2023 Nov 29;13:1294258.
21. Lai D, **Zhang YD**, Lu J. Venous thromboembolism following two doses of COVID-19 mRNA vaccines in the US population, 2020–2022. *Vaccines*. 2022 Aug 15;10(8):1317.
22. Su W, He B, **Zhang YD**, Yin G. C-index regression for recurrent event data. *Contemporary Clinical Trials*. 2022 Jul 1;118:106787.
23. Hong X, Zhang B, Liang L, **Zhang Y**, Ji Y, Wang G, Ji H, Clish CB, Burd I, Pearson C, Zuckerman B. Postpartum plasma metabolomic profile among women with preeclampsia and preterm delivery: implications for long-term health. *BMC medicine*. 2020 Dec;18:1-2.
24. Meisner A, Kundu P, **Zhang YD**, Lan LV, Kim S, Ghandwani D, Choudhury PP, Berndt SI, Freedman ND, Garcia-Closas M, Chatterjee N. Combined utility of 25 disease and risk factor polygenic risk scores for stratifying risk of all-cause mortality. *The American Journal of Human Genetics*. 2020 Sep 3;107(3):418-31.
25. Tubbs JD, **Zhang YD**, Sham PC. Intermediate confounding in trio relationships: The importance of complete data in effect size estimation. *Genetic Epidemiology*. 2020 Jun;44(4):395-9.
26. Pal Choudhury P, Wilcox AN, Brook MN, **Zhang Y**, Ahearn T, Orr N, Coulson P, Schoemaker MJ, Jones ME, Gail MH, Swerdlow AJ. Comparative validation of breast cancer risk prediction models and projections for future risk stratification. *JNCI: Journal of the National Cancer Institute*. 2020 Mar 1;112(3):278-85.

27. Ji Y, Azuine RE, **Zhang Y**, Hou W, Hong X, Wang G, Riley A, Pearson C, Zuckerman B, Wang X. Association of cord plasma biomarkers of in utero acetaminophen exposure with risk of attention-deficit/hyperactivity disorder and autism spectrum disorder in childhood. *JAMA psychiatry*. 2020 Feb 1;77(2):180-9.

## Book Chapter

28. **Zhang YD**, Yu W, Bondell HD. Variable selection with shrinkage priors via sparse posterior summaries. In *Handbook of Bayesian variable selection* 2021 Dec 24 (pp. 179-198). Chapman and Hall/CRC.

## RESEARCH GRANTS

- (PI) Research Grants Council (RGC) General Research Fund (GRF) 2024/25, “*Integrating heterogenous data to enhance gene discovery power in transcriptome-wide association studies*”, HK\$910,742, 2024-2027
- (PI) Research Grants Council (RGC) Early Career Scheme (ECS) 2021/22, “*Integrating external knowledge in Bayesian inference with applications in genetics and genomics*”, HK\$603,303, 2021-2024
- (Co-I) Health and Medical Research Fund 2022, “*Establishing normovolemia in heart failure according to the measurement of blood volume and the Frank-Starling Law of the heart*”, HK\$1,438,248

## TEACHING

- STAT2602, Probability and statistics II, *HKU* (Spring 2025, Fall 2024, Fall 2023, Spring 2023, Fall 2022, Fall 2021)
- STAT3902, Statistical models, *HKU* (Fall 2023, Fall 2022)
- STAT3621, Statistical data analysis, *HKU* (Spring 2021, Spring 2020)
- STAT3604, Design and analysis of experiments, *HKU* (Fall 2020)

## TALKS AND PRESENTATIONS

### Invited Conference Talk

July 2025	2025 Academic Conference on Biostatistics, <i>Chongqing, China</i>
July 2023	2023 Joint Conference on Statistics and Data Science in China, <i>Beijing, China</i>
July 2023	12th ICSA International Conference, <i>Hong Kong, China</i>
July 2023	2023 ICSA China Conference, <i>Chengdu, China</i>
Apr 2023	Science Public Lecture Series, Faculty of Science, The University of Hong Kong, <i>Hong Kong, China</i>
Apr 2023	The 11th World DNA Day and Bio-pharma Industry Congress 2023, <i>Dalian, China</i>
Aug 2022	AI and Big Data Research for Health Improvement Symposium, <i>Virtual Meeting</i>

Jun 2022	NSFC/RGC Workshop on Single-Cell Data Science, <i>Virtual Meeting</i>
Jun 2022	The 5th International Conference on Econometrics and Statistics (EcoSta 2022), <i>Virtual Meeting</i>
Aug 2017	Joint Statistical Meetings (JSM), <i>Baltimore, MD</i>

## MENTORSHIP

(\*First position after leaving the lab.)

### Postdoctoral Fellows

2021–2023	Xin Wang, Associate Professor at Northeastern University (China)*
2021–2023	Han Wang, Associate Professor at China Agricultural University*

### Doctoral Students

2023–	Yu Yun, Department of Statistics and Actuarial Science, HKU
2021–	Xiang Li, Department of Statistics and Actuarial Science, HKU
2020–	Daoyuan Lai, Department of Statistics and Actuarial Science, HKU
2020–2025	Zewei Xiong ( <i>co-supervised with Dr. Pak Sham</i> ), Department of Psychiatry, HKU <b><i>Thesis:</i></b> <i>Exploring statistical methods for estimating heritability, functional enrichment and polygenic risk score using summary GWAS data in complex traits,</i>
2022–2024	Anqi Wang, Department of Statistics and Actuarial Science, HKU <b><i>Thesis:</i></b> <i>Statistical methods for causal inference and bias correction in genetic studies</i> Postdoc at Columbia University*
2020–2024	Peixin Tian, Department of Statistics and Actuarial Science, HKU <b><i>Thesis:</i></b> <i>Development of bioinformatic tools for enhanced prediction and variable selection in genetic studies,</i> Data scientist at AIVI*

### Master Students

2022–2023	Wenliang Wang, Department of Statistics and Actuarial Science, HKU
2020–2022	Hanning Chen, Department of Statistics and Actuarial Science, HKU
2020–2021	Yiqian Hu (RA), Department of Statistics and Actuarial Science, HKU

### Undergraduate Research Assistants

2023.06–12	Siqi Wu, Department of Statistics and Actuarial Science, HKU
2021.07–10	Dickson Lim, Department of Statistics and Actuarial Science, HKU
2020.12– 2021.05	Dailin Gan, Department of Statistics and Actuarial Science, HKU
2020.06– 2021.04	Yuxi Cai, Department of Statistics and Actuarial Science, HKU
2020.06– 2021.02	Tsai Hor Chan, Department of Statistics and Actuarial Science, HKU

### Visiting Scholars

2025.02–05 Xinyue Xu, School of Statistics and Data Science, Nankai University  
 2020.01–08 Baihua He, School of Mathematics and Statistics, Wuhan University

### **Mentee's Awards**

2025 Daoyuan Lai, American Statistical Association Student Paper Award, Biopharmaceutical Statistics Section  
 2025 Daoyuan Lai, Chinese Statistical Association of Young Scholars Travel Award  
 2025 Daoyuan Lai, American Statistical Association Early Career Travel Award  
 2024 Xiang Li, Outstanding Student Poster Award First Prize, EAC-ISBA Conference (Eastern Asia Chapter of International Society for Bayesian Analysis) at EduHK  
 2023 Peixin Tian, Excellent Research Award, Department of Statistics and Actuarial Science, HKU  
 2022 Daoyuan Lai/Peixin Tian, Excellent Research Award, Department of Statistics and Actuarial Science, HKU  
 2021 Daoyuan Lai/Anqi Wang, Excellent Research Award, Department of Statistics and Actuarial Science, HKU

### **HONORS & AWARDS**

2017 Honorable Mention for poster "Estimating effect-size distribution from summary-level statistics for large genome-wide association studies", Genetics Research Day, The Maryland Genetics, Epidemiology, and Medicine Training Program (MD-GEM)  
 2013 Nomination for the University Outstanding Teaching Assistant Award, NCSU  
 2013 Mu Sigma Rho Statistics Society Honor, NCSU  
 2011 Outstanding Graduates Honor, Nankai University, China  
 2010 Excellent Student Leader Honor, Nankai University, China  
 2010 Tianjin Municipal People's Government Scholarship, China  
 2009 National Scholarship, China  
 2008 Hong Kong and Shang Hai Banking Corporation Scholarship, China

### **PROFESSIONAL SERVICES**

#### **School Service**

2024– School Human Resource Advisory Committee, School of Computing and Data Science, HKU  
 2024–2025 RPG Admission Committee, School of Computing and Data Science, HKU  
 2023–2024 Admission & Promotion Committee, Master of Statistics & Data Science Programmes, Department of Statistics and Actuarial Science, HKU  
 2021–2024 Member (Student Exchange) of the BSc(Bioinformatics) Curriculum Committee, School of Biomedical Sciences, LKS Faculty of Medicine, HKU  
 2021–2023 BSc Course Selection Advisor, Department of Statistics and Actuarial Science, HKU  
 2017–2018 Committee Representative of Department of Biostatistics, School of Public Health, Johns Hopkins Postdoctoral Association

- 2013–2014 Student Seminar Representative, Department of Statistics, NCSU  
2013–2014 Executive of STATCOM - NCSU Chapter, a student-run volunteer organization supported by ASA

### **Editorial Activities**

- 2023– *Journal of Heart and Lung Transplantation* (Editor)  
2020–2020 *PLOS Computational Biology* (Guest Editor)

### **Journal Referee**

*American Journal of Human Genetics; Bayesian Analysis; BMJ Global Health; Cancer Epidemiology, Biomarkers & Prevention; Cell Genomics; Communications in Statistics – Theory and Methods; Computational Statistics; Electronic Journal of Statistics; HGC Advances; Human Genetics and Genomics Advances; Human Heredity; International Journal of Biostatistics; Journal of Heart and Lung Transplantation; Journal of the American Statistical Association; Journal of the Royal Statistical Society: Series B; Nature Communications; Nature Genetics; Scientific Reports; Statistics in Medicine*