

## Curriculum Vitae

**Tianzhong Yang**  
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**2221 University Ave SE**  
**Minneapolis, MN 55414**  
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### Education

PhD, The University of Texas Health Science Center at Houston, 2018  
Biostatistics  
Dissertation/Thesis Title: *Statistical Methods for gene-environment interactions and high-dimensional mediation analysis*  
Advisor: Peng Wei

MPH, Boston University, Biostatistics and Epidemiology 2012

BS, Shanghai Jiao Tong University, Shanghai, China. 2010  
Biotechnology

### Academic Appointments

University of Minnesota  
Medical School, Department of Pediatric: Adjunct Assistant Professor 2023 - Present

University of Minnesota  
School of Public Health, Division of Biostatistics and Health Data Science: Assistant Professor 2020 - Present

University of Minnesota  
School of Public Health, Division of Biostatistics: Postdoc Associate 2018 - 2020  
Advisor: Wei Pan

The University of MD Anderson Cancer Center  
Department of Biostatistics, Graduate Research Assistant 2016 - 2018

The University of Texas Health Science Center at Houston  
Department of Biostatistics, Graduate Research Assistant 2014 - 2016

The University of Texas Health Science Center at Houston  
Department of Biostatistics, Teaching Assistant 2013 - 2015

### Other Professional Positions

Boston University  
Clinical Epidemiology Research and Training Unit, Statistician 2011 - 2013

Philips Research North America  
Summer Data Scientist Intern 2016

## HONORS AND RECOGNITION

### University of Minnesota

|                                                                |      |
|----------------------------------------------------------------|------|
| BHDS Thank-a-Mentor recognition, School of Public Health       | 2026 |
| Rewarding Excellence and Productivity, School of Public Health | 2023 |

### External Sources

|                                                                                                     |                |
|-----------------------------------------------------------------------------------------------------|----------------|
| Julia's Legacy of Hope Scholar, St. Baldrick's Foundation                                           | 2024 - Present |
| Robert H. Bigelow Endowed Scholarship, The University of Texas Health Science Center at Houston     | 2017           |
| Summer Institute Scholarship Award, University of Washington                                        | 2017           |
| Allan R. Meyers Memorial Fellowship for the advancement of careers in disability, Boston University | 2011           |
| Merit Scholarship, Boston University                                                                | 2010           |
| People's Scholarship in China, Shanghai Jiao Tong University                                        | 2009           |

## RESEARCH, SCHOLARSHIP, AND CREATIVE WORK

### Grants, Contract, Awards Currently Funded: External Sources

- Award: Evaluating Germline genetic risk factors of Ewing Sarcoma onset and survival**  
Role: *Principal Investigator*  
Principal Investigator: Yang, Tianzhong (University of Minnesota)  
Sponsoring Organization: St. Baldrick's Foundation  
Sponsoring Organization Reference ID: 1463960  
Award Dates: July 1, 2024 - June 30, 2027  
Total Award Amount: \$279,998  
Effort: 60% salary support (Year 1-2), 20% salary support (Year 3, Reduction of this career award due to receipt of another grant according to the award guideline)
- Award: Polygenic predictors of primary ovarian insufficiency in survivors of childhood cancer**  
Role: *Co-Principal Investigator*  
Co-Project Investigators: Im, Cindy (University of Minnesota)  
Sponsoring Organization: The Children's Cancer Research Fund  
Award Dates: August 2024 - July 2027  
Total Award Amount: \$100,000  
Effort: 1% salary support (Year 1), 5% salary support (Year 2)
- Award: Estimation and inference in directed acyclic graphical models for biological networks**  
Role: Co-investigator  
Principal Investigator: Shen, Xiaotong T. (University of Minnesota)  
Sponsoring Organization: NIH National Institute on Aging (NIA)  
Sponsoring Organization Reference ID: 1R01AG074858-01  
Award Dates: April 1, 2022 - January 31, 2027

Total Award Amount: \$3,189,178  
Effort: 15% salary support

4. **Award: Novel Methods to Quantify High-dimensional Omics Mediation Effects from Alcohol Intake to Coronary Heart Disease**

Role: ***Co-Principal Investigator***

Co-Project Investigators: Li, Chunlin (University of Virginia)

Sponsoring Organization: NIH National Heart, Lung, and Blood Institute

Award Dates: Jun 22, 2026 – Feb 28, 2030

Percent Effort: 30% salary support

Total Proposed Amount: \$3,259,742

***Previously Funded and Concluded***

1. **Award: Sex and racial/ethnic differences in B-ALL genomics**

Role: Co-investigator

Principal Investigators: Spector, Logan G. (University of Minnesota)

Sponsoring Organization: NIH National Cancer Institute (NCI)

Award Dates: August 2024 - July 2025

Total Award Amount: \$155,000

Effort: 1% salary support

Purpose: To conduct sex specific genome-wide association studies using the same genome-wide array data being generating by the parent R01, and to identify sex-differential expression quantitative trait loci using a newly generated source of pediatrics data for African American children.

2. **Award: Genomics of childhood leukemia: Analysis of diverse, worldwide populations**

Role: Statistical Geneticists

Principal Investigator: Spector, Logan G. (University of Minnesota)

Sponsoring Organization: Blood Cancer United

Sponsoring Organization Reference ID: MCG-23020-22

Award Dates: March 1, 2022 - February 28, 2025

Total Award Amount: \$250,000

Effort: 3% salary support

Purpose: To aggregate, clean, and harmonize existing childhood cancer germline genotype data at three analysis centers.

3. **Award: Evaluating genetic risk factors of hepatoblastoma onset and survival**

Role: ***Principal Investigator***

Sponsoring Organization: St. Baldrick's Foundation

Sponsoring Organization Reference ID: 932143

Award Dates: July 1, 2022 - June 30, 2024

Total Award Amount: \$229,998

Effort: 60% salary support

Purpose: To better understand the genetic causes of hepatoblastoma, a rare childhood liver cancer.

4. **Award: Somatic mosaicism in twins discordant for childhood cancer**

Role: Co-investigator

Principal Investigator: Poynter, Jenny N. (University of Minnesota)

Sponsoring Organization: Children's Cancer Research Fund

Award Dates: August 2022 - July 2023

Total Award Amount: \$100,000

Effort: 5% salary support (Year 1), 1% salary support (Year 2)

Purpose: Establish the feasibility of recruiting and conducting in home sample collection of biospecimens from same sex twins discordant for childhood CNS tumors; Compare the prevalence of somatic mosaicism in classic cancer-associated genes in same-sex twins discordant for childhood brain tumors; Compare profile of mutation detected in DNA extracted from pre- and post-treatment blood samples from CNS tumor patients.

5. **Award: Evaluating non-genetic risk factors for hepatoblastoma through genetic epidemiology methods**

Role: *Principal Investigator*

Sponsoring Organization: Children's Cancer Research Fund

Award Dates: August 2021 - July 2023

Total Award Amount: \$100,000

Effort: 5% salary support

Purpose: Develop a new statistical agnostic screen method and apply it to search for non-genetic risk factors for hepatoblastoma; Verify the causality of putative non-genetic risk factors of HB using genetic epidemiological methods.

6. **Award: Admixture analysis of acute lymphoblastic leukemia in African American children: the ADMIRAL Study**

Role: Co-investigator

Principal Investigator: Spector, Logan G. (University of Minnesota)

Sponsoring Organization: NIH National Cancer Institute

Sponsoring Organization Reference ID: 1R01CA239701-01A1S1, S2 and S3

Award Dates: August 1, 2020 - July 31, 2025

Total Award Amount: \$3,838,319

Effort: 1% salary support

Purpose: To conduct admixture mapping of acute lymphoblastic leukemia risk and outcome in African American patients.

***Pending/Submitted***

1. **Proposal: Transcriptome-wide association study of childhood acute lymphoblastic leukemia informed by single-cell analysis of cord blood derived precursor cells**

Role: *Co-Principal Investigator*

Co-Project Investigators: Spector, Logan G. (University of Minnesota)

Sponsoring Organization: NIH National Cancer Institute

Date Submitted: June 5, 2026

Total Proposed Amount: \$3,960,762

Percent Effort: 30%

2. **Proposal: Multi-ancestry maternal genomics and offspring risk of childhood acute lymphoblastic leukemia: the MaternALL study**

Role: *Co-Principal Investigator*

Co-Project Investigators: Spector, Logan G. (University of Minnesota)

Sponsoring Organization: NIH National Cancer Institute

Date Submitted: June 5, 2026

Percent Effort: 35%

Total Proposed Amount: \$4,464,827

3. **Proposal: Development of Tissue-Specific Toxicity Index (TSTI) for Human-Centric Drug Toxicity Prediction**  
Role: Co-Investigator  
Principal Investigator: Cheng, Shen (University of Minnesota)  
Sponsoring Organization: NIH National Institute of General Medical Science  
Date Submitted: June 3, 2026  
Percent Effort: 10%  
Total Proposed Amount: \$2,866,763
4. **Proposal: Statistical and Computational Methods for Policy-Aware Federated Genomics**  
Role: Co-Investigator  
Principal Investigator: Basu, Saonli (University of Minnesota)  
Sponsoring Organization: NIH National Human Genome Research Institute  
Date Submitted: February 11, 2026  
Percent Effort: 10%  
Total Proposed Amount: \$423,500  
Status: Waiting for review
5. **Proposal: Genomic Insights into Immune Aging: Exploring the Impact of cytomegalovirus infection on T-Cell Dynamics**  
Role: *Co-Principal Investigator*  
Co-Project Investigators: Guan, Weihua and Thyagarajan, Bharat (University of Minnesota)  
Sponsoring Organization: NIH National Institute on Aging  
Date Submitted: February 4, 2026  
Percent Effort: 20%  
Total Proposed Amount: \$3,498,142  
Status: Waiting for review
6. **Proposal: Early Statin Therapy for Asymptomatic Osteonecrosis After Acute Lymphoblastic Leukemia: A Controlled Pilot Study of Feasibility, Safety, and Preliminary Efficacy Signals**  
Role: Co-Investigator  
Principal Investigator: Cheng, Edward (University of Minnesota)  
Date Submitted: March 16, 2026  
Percent Effort: 5%  
Total Proposed amount: \$421,954

**Grants, Contract, Awards Currently Funded: Internal Sources**

***Previously Funded and Concluded***

1. **Award: Statistical Models for Multi-Omics Multi-Cell Deconvolution**  
Role: *Co-Principal Investigator*  
Co-Project Investigators: Guan, Weihua (University of Minnesota)  
Sponsoring Organization: Division of Biostatistics and Health Data Science at University of Minnesota (BHDS Seed Grant)  
Award Dates: August 2022 - August 2024  
Total Award Amount: \$109,836  
Effort: 0% salary support

Purpose: To develop novel statistical models for cell deconvolution for bulk tissue

**Pending/Submitted**

1. **Proposal: Integrative genomics study of pediatric CNS cancer using Healthy Brain and Child Development and Molecular Characterization Initiative studies**

Role: *Co-investigator*

Principal Investigator: Spector, Logan G. (University of Minnesota)

Sponsoring Organization: Masonic Institute for the Developing Brain at University of Minnesota

Date Submitted: June 24, 2026

Total Proposed Amount: \$100,000

Percent Effort: 0%

**Publications**

*Hash(#)* - indicates co-first author

*Underline* - indicates student author

**Peer-Reviewed Journal Article**

1. Kang, Z., Chen, L.<sup>#</sup>, Wei, P., Xu, Z., Li, C., & **Yang, T.** (2026). Estimation of total mediation effect for a binary trait in a case-control study for high-dimensional omics mediators. *Annals of Applied Statistics* [In Press] PubMed Central ID Number: PMC11838279 [doi: 10.1101/2025.01.28.635396](https://doi.org/10.1101/2025.01.28.635396)
2. Arafa, A., Boytim, E., **Yang, T.**, & Antonarakis, E. S. (2026). Plasma Extracellular-Vesicle Proteomics Nominates Candidate Biomarkers of <sup>177</sup> Lu-PSMA-617 Outcomes in Metastatic Prostate Cancer Patients. *Cell Reports Medicine*, 7(5), 102764. PubMed Central ID Number: PMC13198300 [doi: 10.1016/j.xcrm.2026.102764](https://doi.org/10.1016/j.xcrm.2026.102764)
3. Cao, R., Li, C., Cui, C., Spector, L., Raduski, A., Anderson, N., . . . **Yang, T.** (2026). A Pseudotime-dependent TWAS framework identifies disease genes along cell developmental paths. *HGG Advances*. [Accepted] PubMed Central ID Number: PMC12636649 [doi: 2025.10.25338929](https://doi.org/2025.10.25338929)
4. Im, C., Raduski, A. R., Mills, L. J., Bhattarai, K. R., Mobley, R. J., Barnett, K. R., Lu, Z., Liao, K., Anderson, N., Johnson, R. A., Langer, E., Hooten, A. J., Seif, A. E., Bernt, K. M., Tsang, M., Mamou, B. A., Gil-de-Gómez, L., Wolfson, J. A., Friedman, D. N., Shukla, N., Klesse, L. J., Marcotte, E. L., Ji, L., Dang, A., Luo, M., Zhong, Y., Langie, J., Chiang, C. W. K., de Smith, A., Wiemels, J. L., DeWan, A., Ma, X., Metayer, C., Wang, Z., Nelson, H. H., Pankratz, N., **Yang, T.**, . . . Spector, L. G. (2025). Genome-wide association study of childhood B-cell acute lymphoblastic leukemia reveals novel African ancestry-specific susceptibility loci. *Nature communications*, 16(1), 8974. PubMed Central ID Number: PMC12546916 [doi: 10.1038/s41467-025-64337-7](https://doi.org/10.1038/s41467-025-64337-7)
5. Xie, T., Sorenson, J. C.<sup>#</sup>, Spector, L. G., Pankratz, N., Huang, R. S., Hiyama, E., . . . **Yang, T.** (2025). Multiancestry Transcriptome-Wide Association Study Identifies Candidate Genes Associated with Hepatoblastoma. *Cancer epidemiology, biomarkers & prevention*, 34(8), 1405-1414. [doi: 10.1158/1055-9965.EPI-24-1553](https://doi.org/10.1158/1055-9965.EPI-24-1553)
6. Xu, Z., Li, C., Chi, S., **Yang, T.**, & Wei, P. (2024). Speeding up interval estimation for R2-based mediation effect of high-dimensional mediators via cross-fitting. *Biostatistics (Oxford, England)*, 26(1). PubMed Central ID Number: PMC11823199 [doi: 10.1093/biostatistics/kxae037](https://doi.org/10.1093/biostatistics/kxae037)  
*Role: Conceptualized the idea, supervised the project, worked closely with the student researcher, and critically revised the manuscript*
7. Lucas, S. E., **Yang, T.**, Wimberly, C. E., Parmar, K. V., Hansen, H. M., de Smith, A. J., . . . Walsh, K. M. (2024). Genetic variation near GRB10 associated with bone growth and osteosarcoma risk in

canine and human populations. *Cancer epidemiology*, 92, 102599. PubMed Central ID Number: PMC11402579 doi: 10.1016/j.canep.2024.102599

*Role: Conducted some of the statistical analyses, wrote part of the statistical methods/results, and critically revised the manuscript*

8. Gianferante, D. M., Moore, A., Spector, L. G., Wheeler, W., **Yang, T.**, Hubbard, A., . . . Mirabello, L. (2024). Genetically inferred birthweight, height, and puberty timing and risk of osteosarcoma. *Cancer epidemiology*, 92, 102432. PubMed Central ID Number: PMC10869637 doi: [10.1016/j.canep.2023.102432](https://doi.org/10.1016/j.canep.2023.102432)
9. Im, C., Neupane, A., Baedke, J. L., Lenny, B., Delaney, A., Dixon, S. B., Chow, E. J., Mostoufi-Moab, S., **Yang, T.**, . . . Sapkota, Y. (2024). Trans-Ancestral Genetic Risk Factors for Treatment-Related Type 2 Diabetes Mellitus in Survivors of Childhood Cancer. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*, 42(19), 2306-2316. PubMed Central ID Number: PMC11209771 doi: [10.1200/JCO.23.02281](https://doi.org/10.1200/JCO.23.02281)
10. Zhu, H., Choi, J., Kui, N., **Yang, T.**, Wei, P., Li, D., & Sun, R. (2024). Identification of Pancreatic Cancer Germline Risk Variants With Effects That Are Modified by Smoking. *JCO precision oncology*, 8, e2300355. PubMed Central ID Number: PMC11000774 doi: [10.1200/PO.23.00355](https://doi.org/10.1200/PO.23.00355)
11. Zilinskas, R., Li, C., Shen, X., Pan, W., & **Yang, T.** (2024). Inferring a directed acyclic graph of phenotypes from GWAS summary statistics. *Biometrics*, 80(1). PubMed Central ID Number: PMC10928990 doi: [10.1093/biomtc/ujad039](https://doi.org/10.1093/biomtc/ujad039)
12. **Yang, T.**, Mills, L. J., Hubbard, A. K., Cao, R., Raduski, A., Machiela, M. J., & Spector, L. G. (2024). Genetic analyses identify evidence for a causal relationship between Ewing sarcoma and hernias. *HGG advances*, 5(1), 100254. PubMed Central ID Number: PMC10692953 doi: [10.1016/j.xhgg.2023.100254](https://doi.org/10.1016/j.xhgg.2023.100254)
13. Cao, R., Olawsky, E., McFowland, 3rd, E., Marcotte, E., Spector, L., & **Yang, T.** (2024). Subset scanning for multi-trait analysis using GWAS summary statistics. *Bioinformatics (Oxford, England)*, 40(1). PubMed Central ID Number: PMC11087659 doi: [10.1093/bioinformatics/btad777](https://doi.org/10.1093/bioinformatics/btad777)
14. **Yang, T.**, Mills, L. J., Xue, H., Raduski, A., Williams, L. A., & Spector, L. G. (2022). Impact of fetal expression quantitative trait loci on transcriptome-wide association study of childhood leukemia. *Human molecular genetics*, 31(19), 3207-3215. doi: [10.1093/hmg/ddab336](https://doi.org/10.1093/hmg/ddab336)
15. Cigan, S. S., Meredith, J. J., Kelley, A. C., **Yang, T.**, Langer, E. K., Hooten, A. J., . . . Poynter, J. N. (2022). Predicted leukocyte telomere length and risk of germ cell tumours. *British journal of cancer*, 127(2), 301-312. PubMed Central ID Number: PMC9296514 doi: [10.1038/s41416-022-01798-3](https://doi.org/10.1038/s41416-022-01798-3)
16. **Yang, T.**, Jackson, V. E., Smith, A. V., Chen, H., Bartz, T. M., Sitlani, C. M., . . . Morrison, A. C. (2021). Rare and low-frequency exonic variants and gene-by-smoking interactions in pulmonary function. *Scientific reports*, 11(1), 19365. PubMed Central ID Number: PMC8481467 doi: [10.1038/s41598-021-98120-7](https://doi.org/10.1038/s41598-021-98120-7)
17. **Yang, T.**, Niu, J., Chen, H., & Wei, P. (2021). Estimation of total mediation effect for high-dimensional omics mediators. *BMC bioinformatics*, 22(1), 414. PubMed Central ID Number: PMC8381496 doi: [10.1186/s12859-021-04322-1](https://doi.org/10.1186/s12859-021-04322-1)
18. **Yang, T.**, Wei, P., & Pan, W. (2021). Integrative analysis of multi-omics data for discovering low-frequency variants associated with low-density lipoprotein cholesterol levels. *Bioinformatics (Oxford, England)*, 36(21), 5223-5228. PubMed Central ID Number: PMC7850048 doi: [10.1093/bioinformatics/btaa898](https://doi.org/10.1093/bioinformatics/btaa898)
19. **Yang, T.**, Tang, H., Risch, H. A., Olson, S. H., Peterson, G., Bracci, P. M., . . . Wei, P. (2020). Incorporating multiple sets of eQTL weights into gene-by-environment interaction analysis identifies

- novel susceptibility loci for pancreatic cancer. *Genetic epidemiology*, 44(8), 880-892. PubMed Central ID Number: PMC7657998 [doi: 10.1002/gepi.22348](https://doi.org/10.1002/gepi.22348)
20. **Yang, T.**, Wu, C., Wei, P., & Pan, W. (2020). Integrating DNA sequencing and transcriptomic data for association analyses of low-frequency variants and lipid traits. *Human molecular genetics*, 29(3), 515-526. PubMed Central ID Number: PMC7015848 [doi: 10.1093/hmg/ddz314](https://doi.org/10.1093/hmg/ddz314)
  21. **Yang, T.**, Kim, J., Wu, C., Ma, Y., Wei, P., & Pan, W. (2020). An adaptive test for meta-analysis of rare variant association studies. *Genetic epidemiology*, 44(1), 104-116. PubMed Central ID Number: PMC6980317 [doi: 10.1002/gepi.22273](https://doi.org/10.1002/gepi.22273)
  22. **Yang, T.**, Chen, H., Tang, H., Li, D., & Wei, P. (2019). A powerful and data-adaptive test for rare-variant-based gene-environment interaction analysis. *Statistics in medicine*, 38(7), 1230-1244. PubMed Central ID Number: PMC6399020 [doi: 10.1002/sim.8037](https://doi.org/10.1002/sim.8037)
  23. **Yang, T.**, Yang, Y., Jia, Y., & Li, X. (2019). Dynamic prediction of hospital admission with medical claim data. *BMC medical informatics and decision making*, 19(Suppl 1), 18. PubMed Central ID Number: PMC6354329 [doi: 10.1186/s12911-019-0734-y](https://doi.org/10.1186/s12911-019-0734-y)
  24. Simon, D. K., Wu, C., Tilley, B. C., Lohmann, K., Klein, C., Payami, H., . . . **Yang, T.** (2017). Caffeine, creatine, GRIN2A and Parkinson's disease progression. *Journal of the neurological sciences*, 375, 355-359. PubMed Central ID Number: PMC5386398 [doi: 10.1016/j.jns.2017.02.032](https://doi.org/10.1016/j.jns.2017.02.032)
  25. Guermazi, A., Eckstein, F., Hayashi, D., Roemer, F. W., Wirth, W., **Yang, T.**, . . . Felson, D. T. (2015). Baseline radiographic osteoarthritis and semi-quantitatively assessed meniscal damage and extrusion and cartilage damage on MRI is related to quantitatively defined cartilage thickness loss in knee osteoarthritis: the Multicenter Osteoarthritis Study. *Osteoarthritis and cartilage*, 23(12), 2191-2198. PubMed Central ID Number: PMC4957527 [doi: 10.1016/j.joca.2015.06.017](https://doi.org/10.1016/j.joca.2015.06.017)
  26. Haugen, I. K., Ramachandran, V. S., Misra, D., Neogi, T., Niu, J., **Yang, T.**, . . . Felson, D. T. (2015). Hand osteoarthritis in relation to mortality and incidence of cardiovascular disease: data from the Framingham heart study. *Annals of the rheumatic diseases*, 74(1), 74-81. PubMed Central ID Number: PMC3959628 [doi: 10.1136/annrheumdis-2013-203789](https://doi.org/10.1136/annrheumdis-2013-203789)
  27. Glass, N. A., Torner, J. C., Frey Law, L. A., Wang, K., **Yang, T.**, Nevitt, M. C., . . . Segal, N. A. (2013). The relationship between quadriceps muscle weakness and worsening of knee pain in the MOST cohort: a 5-year longitudinal study. *Osteoarthritis and cartilage*, 21(9), 1154-9. PubMed Central ID Number: PMC3774035 [doi: 10.1016/j.joca.2013.05.016](https://doi.org/10.1016/j.joca.2013.05.016)
  28. Felson, D. T., Niu, J., **Yang, T.**, Torner, J., Lewis, C. E., Aliabadi, P., . . . Nevitt, M. C. (2013). Physical activity, alignment and knee osteoarthritis: data from MOST and the OAI. *Osteoarthritis and cartilage*, 21(6), 789-95. PubMed Central ID Number: PMC3648587 [doi: 10.1016/j.joca.2013.03.001](https://doi.org/10.1016/j.joca.2013.03.001)
  29. Roemer, F. W., Felson, D. T., **Yang, T.**, Niu, J., Crema, M. D., Englund, M., . . . Guermazi, A. (2013). The association between meniscal damage of the posterior horns and localized posterior synovitis detected on T1-weighted contrast-enhanced MRI--the MOST study. *Seminars in arthritis and rheumatism*, 42(6), 573-81. PubMed Central ID Number: PMC3640766 [doi: 10.1016/j.semarthrit.2012.10.005](https://doi.org/10.1016/j.semarthrit.2012.10.005)

### **Conference Proceeding**

1. Jia, Y., Wang, X., Cao, H., Ru, B., **Yang, T.** (2018) An empirical study of using an ensemble model in e-Commerce Taxonomy Classification Challenge. SIGIR eCom 2018 Data Challenge Papers.

### **Software**



1. Cao, R., **Yang, T.** TraitScan: *A Trait Subset Scan Method for Multi-trait GWAS*. R package version 0.1.0. <https://github.com/RuiCao34/TraitScan>
2. Li, C., **Yang, T.**, Zilinskas, R., Shen, X., Pan, W. (2023) *sumDAG: Estimation and inference of directed acyclic graph from GWAS summary statistics*. R package version 0.9.0. <https://github.com/chunlinli/sumdag>
3. **Yang, T.** (2023) *RsqMed: Total Mediation Effect Size Measure for High-Dimensional Mediators*. R package version 1.1. <https://cran.r-project.org/web/packages/RsqMed>
4. **Yang, T.** (2018) *aGE: Adaptive Set-based Gene-Environmental Interaction Test for Rare Variants*. R package version 0.2. <https://github.com/ytzhong/aGE>
5. **Yang, T.** (2018) *metaRV: An adaptive test for meta-analysis of rare variants in sequencing studies*. R package version 1.0. <https://github.com/ytzhong/metaRV>

### Patents and Intellectual Property

1. Huang, S.R., Cheng, S., **Yang, T.**, Shan, Y., Wang, L., Chaudhari, A. Tissue Specific Drug Induced Toxicity Forecaster. (Under filing at University of Minnesota, 2026)
2. Yang, Y., **Yang, T.**, Sedsh R., Jia Y. Systems and methods for dynamic monitoring of patient conditions and prediction of adverse events. Issued: May 14, 2020

### Invited Presentations, Posters, and Exhibits

#### *Presentation/Talk*

1. **Yang, T.** "Evaluating General Population Polygenic Risk Score in Childhood Cancer Survivors for Anthropometric Traits," RR-BIG seminar University of Minnesota. (July 2026).
2. **Yang, T.** "Causal Models for High-dimensional Genomics Data," University of Tennessee Health Science Center, Virtual. (February 2026).
3. **Yang, T.** "Quantifying the Total Mediation Effect for Nonsparse High-dimensional Genomics Mediators," Joint Statistical Meeting, Nashville, Tennessee. (August 2025).
4. **Yang, T.** "Quantifying the Total Mediation Effect for Nonsparse High-dimensional Genomics Mediators," International Chinese Statistical Association Applied Statistics Symposium International Chinese Statistical Association, Storrs, Connecticut. (June 2025).
5. **Yang, T.** "Quantifying the Total Mediation Effect for Nonsparse High-dimensional Genomics Mediators," A Special Conference on Biostatistics in the New Era of Data-Driven Sciences, Houston, Texas, United States. (November 2024).
6. **Yang, T.** "Statistical Models for multi-trait analysis using summary-level genetic data," Medical College of Wisconsin, Milwaukee, Wisconsin, United States. (April 2024).
7. **Yang, T.** "Statistical Models for Advancing Childhood Cancer Research with Genomics Data," University of Minnesota, Minneapolis, Minnesota. (March 2024).
8. **Yang, T.** "Inferring a directed acyclic graph of phenotypes from GWAS summary statistics," CMStatistics. (December 2023).
9. **Yang, T.** "Subset scanning for multi-trait analysis using GWAS summary statistics," University of Mississippi Medical Center. (September 2023).

10. **Yang, T.** "Subset scanning for multi-trait analysis using GWAS summary statistics," Joint Statistical Meeting, Toronto, Canada. (August 2023).
11. **Yang, T.** "Subset scanning for multi-trait analysis using GWAS summary statistics," International Chinese Statistical Association Applied Statistics Symposium International Chinese Statistical Association, Ann Arbor, Michigan. (June 2023).
12. **Yang, T.** "Evaluate non-genetic risk factors for childhood cancers through genetic epidemiology methods," North Carolina at Greensboro, Greensboro, North Carolina, United States. (October 21, 2022).

### ***Panelist***

1. **Yang, T.** "Center for Innovative Design and Analysis Panel Discussion on Career experience," University of Colorado Anschutz. (April 2023). *Invited.*

### **Contributed presentations, Posters, and Exhibits**

Underline - indicates student presenter

### ***Poster***

1. Sorenson, J., Raduski, A., Mills, L., Williams, L., Marcotte, E., Huang, R. H., Spector, L., **Yang, T.** "Exploring survival-associated tumor expression quantitative trait loci (eQTLs) in pediatric hepatoblastoma: Insights from a Japanese cohort," International Genetic Epidemiology Society Annual Meeting, Denver. (November 2024).
2. Cao, R., Olawsky, E., McFowland III, E., Marcotte, E., Spector, L., **Yang, T.** "TraitScan: subset scanning for multi-trait analysis using GWAS summary statistics," American Society of Human Genetics Annual Meeting, Washington. (November 2023).
3. Cao, R., Olawsky, E., McFowland III, E., Marcotte, E., Spector, L., **Yang, T.** "TraitScan: subset scanning for multi-trait analysis using GWAS summary statistics," Masonic Cancer Center. (October 2023).
4. Cao, R., Li, C., Cui, E., Spector, L., Im, C., Gordon, P., Raduski, A., Anderson, N., **Yang, T.** "A pseudo-time dependent TWAS framework identifies phenotype-associated genes along cell developmental paths.," STATGEN2025, Minneapolis, Minnesota. (May 2025).
5. Liu, Y., Im, C., **Yang, T.** "Improving polygenic risk prediction with pharmacogenomics: gene-radiotherapy interactions and impaired height in childhood cancer survivors," American Society of Human Genetics Annual meeting, Boston, Massachusetts, United States. (October 2025).
6. **Yang, T.** "Genomic analysis of Ewing Sarcoma and Hernia," Childhood Cancer and Leukemia International Consortium (CLIC) meeting, Seattle, Washington. (October 2023).

### ***Presentation/Talk***

1. Sirnivasan, A., Wang, J., Matt, G., Sapkota, Y., Wang, Z., **Yang, T.**, Neglia, J. P., Turcotte, L. M., Hudson, M. M., Ness, K. K., Armstrong, G. T., Zhang, J., Robison, L. L., Zhou, X., Yasui, Y., Im, C. "Clinical utility of 99 breast cancer polygenic risk scores in female survivors of childhood cancer: a CCSS and SJLIFE report," International Symposium on Late Complications after Childhood Cancer, Seattle, Washington, United States. (June 2025).

2. Sorenson, J., Raduski, A., Mills, L., Williams, L., Marcotte, E., Huang, R. H., Spector, L., **Yang, T.** "Exploring survival-associated tumor expression quantitative trait loci (eQTLs) in pediatric hepatoblastoma: Insights from a Japanese cohort," STATGEN 2025, Minneapolis, Minnesota. (May 2025).
3. Kang, Z., Wei, P., Xu, Z., Li, C., **Yang, T.** "Estimation of Total Mediation Effect for High-Dimensional Mediators in a Case-Control Study," ENAR, New Orleans. (March 2025).
4. **Yang, T.** "Subset scanning for multi-trait analysis using GWAS summary statistics," Joint statistical meetings, Toronto. (August 2023).
5. **Yang, T.** "Adaptive test for meta-analysis of rare variant association studies," International Genetic Epidemiology Society (IGES), Houston, Texas. (October 2019).
6. **Yang, T.** "Integrating DNA sequencing and transcriptomic data for association analyses of rare variants and lipid traits," American Society of Human Genetics (ASHG), Houston, Texas. (October 2019).
7. **Yang, T.** "Estimation of Mediation Effect for High-dimensional Omics Mediators with Application to the Framingham Heart Study," Joint Statistical Meeting (JSM), Denver, Colorado. (August 2019).
8. **Yang, T.** "Dynamic prediction of hospital admission with medical claim data," International Conference on Intelligent Biology and Medicine (ICIBM), Los Angeles, California. (June 2018).
9. **Yang, T.** "A Powerful and Data-Adaptive Test for Rare Variant-Based GxE Analysis," Eastern North American Region (ENAR), Atlanta, Georgia. (March 2018).
10. **Yang, T.** "A Powerful and Data-Adaptive Test for Rare Variant-Based GxE Analysis," JSM, Baltimore, Maryland. (August 2017).

## TEACHING

### Scheduled Teaching

|                                                      |                  |
|------------------------------------------------------|------------------|
| PubH 8446: Advanced Topics in Omics Analysis         | Spring 2026      |
| PubH 6450: Biostatistics I (Co-taught with Laura Le) | Fall 2021 & 2023 |

### Instructional Activity

#### University of Minnesota

1. Guest Lecture for Research Skills in Biostatistics, PUBH 8403  
Topic: Choosing a dissertation topic and advisor  
Fall 2021- 2022
2. Guest Lecture for Research Skills in Biostatistics, PUBH 8403  
Topic: Formulating a research question and reviewing the literature  
Fall 2025
3. Guest Lectures for Directed Research in Biostatistics, PUBH 8494  
Co-led with Saonli Basu on organizing discussions and topics related to omics data analysis  
Fall 2023
4. Guest Lectures for Biostatistics Modeling and Methods, PUBH 7402  
An introduction to causal inference  
Spring 2019

## CURRICULUM DEVELOPMENT ACTIVITIES

### Curriculum Development Activities

#### *University of Minnesota*

Revised and updated a new course curriculum, PUBH 8446 Advanced Topics in Omics Data Analysis

Spring 2026

## ADVISING AND MENTORING

### Graduate Student Activities

#### *Academic Advisees*

- |                                                  |                |
|--------------------------------------------------|----------------|
| 1. Joshua Hebeisen, Biostatistics MS             | 2025- Present  |
| 2. Josey Sorenson, Biostatistics PhD             | 2025- Present  |
| 3. Mark McMillin, Public Health Data Science MPH | 2025 - Present |
| 4. Zhiyu Kang, Biostatistics PhD                 | 2024 - 2026    |
| 5. Rui Cao, Biostatistics PhD                    | 2024 - 2025    |
| 6. Zheqi Yin, Biostatistics MS                   | 2024 - 2025    |
| 7. Yuzi Mi, Biostatistics PhD                    | 2023 - 2025    |
| 8. Tyler Jubenville, Biostatistics MS            | 2021 - 2025    |
| 9. Boya Shi, Biostatistics MS                    | 2022 - 2024    |
| 10. Tianjie Zhang, Biostatistics MS              | 2024           |
| 11. Lujun Zhang, Biostatistics PhD               | 2022 - 2024    |

#### *Doctoral Dissertation Directed*

- |                                                                                                                                                                                                         |                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 1. Josey Sorenson, Biostatistics PhD<br>Thesis: <i>High-dimensional mediation analysis with applications to multi-omics data</i>                                                                        | 2026 (expected) |
| 2. Zhiyu Kang, Biostatistics PhD<br>Co-advised with Dr. Erick Lock<br>Thesis: <i>High-dimensional Tensor Decomposition and Mediation Analysis</i>                                                       | 2026            |
| 3. Rui Cao, Biostatistics PhD<br>Co-advised with Dr. Weihua Guan<br><i>Doctoral Dissertation Fellowship</i><br>Thesis: <i>Statistical Models for High-Dimensional Genetic and Genomic Data Analysis</i> | 2025            |

#### *Master's Thesis Directed*

- |                                                                                                        |      |
|--------------------------------------------------------------------------------------------------------|------|
| 1. Joshua Hebeisen, Biostatistics MS<br>Thesis: <i>Building Benchmarking Pipelines for Single-Cell</i> | 2026 |
|--------------------------------------------------------------------------------------------------------|------|

## Batch Correction Methods

### **Doctoral Final Committee: Committee Chair**

- |                                                                                  |      |
|----------------------------------------------------------------------------------|------|
| 1. Michael Anderson, Biostatistics PhD                                           | 2024 |
| Thesis: <i>Methods for Supervised Machine Learning and Polygenic Risk Scores</i> |      |

### **Doctoral Final Committee: Committee Member**

- |                                                                                                                                                |      |
|------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Yuting Shan, Exp & Clin Pharmacology PhD                                                                                                    | 2026 |
| Thesis: <i>Understanding and Predicting Heterogeneity in Cancer Treatment Response and Adverse Drug Reactions through Multi-omics Approach</i> |      |
| 2. Allison Domingues, Epidemiology PhD                                                                                                         | 2023 |
| Thesis: <i>Records-based Childhood Cancer Research Applications and Methods</i>                                                                |      |

### **Doctoral Preliminary Committee: Committee Member**

- |                                                                                                                                        |                |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 1. Zexi Rao, Biostatistics PhD                                                                                                         | 2026 - Present |
| Thesis: <i>Machine learning for patient-level risk prediction from longitudinal, single-cell, and multimodal omics data</i>            |                |
| 2. Lilin Wang, Exp & Clin Pharmacology PhD                                                                                             | 2026 - Present |
| Thesis: <i>Optimizing Cancer Therapy Efficacy and Safety at Single-Cell Resolution</i>                                                 |                |
| 3. Jialing Liu, Biostatistics PhD                                                                                                      | 2025 - Present |
| Thesis: <i>Bayesian Transfer Learning for High-Dimensional and Longitudinal Biomedical Studies</i><br>Doctoral Dissertation Fellowship |                |
| 4. Rachel Moss, Bioinform & Comp Biol PhD                                                                                              | 2021           |
| Thesis: <i>Etiology of pediatric solid tumors using multi-omic approaches</i>                                                          |                |

### **Master's Thesis/Research Committee: Committee Member**

- |                                                                                                                                                                     |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Boya Shi, Biostatistics MS                                                                                                                                       | 2024 |
| Thesis: <i>Advancing the Analysis of Neurocognitive Functions in Cryptococcal Meningitis Survivors</i>                                                              |      |
| 2. Seth Bergstedt, Biostatistics MS                                                                                                                                 | 2023 |
| Thesis: <i>Modeling Postoperative Root Canal Therapy Pain using the PREDICT Study: The Predictive Use of Group LASSO Penalized Regression in a Clinical Setting</i> |      |

### **Mentoring/Career Advising**

- |                                                                                                                                                    |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Jeremy Allred, University of Minnesota Medical School Department of Medicine, Division of Hematology, Oncology and Transplantation<br>K08 Award | 2025 |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------|

2. Xiong Serena, University of Minnesota School of Medicine Department of Family Medicine and Community Health  
PreK Award at CTSI 2024

### Research and Teaching Trainees

1. Josey Sorenson 2025 - 2026  
Graduate Research Assistant on Divisional Startup Fund to develop new statistical methods related to mediation analysis (PI: Tianzhong Yang)
2. Aparna Srinivasan 2024 - 2025  
Graduate Research Assistant evaluating polygenic risk score for childhood cancer survivors (MPI: Cindy Im, Tianzhong Yang)
3. Josey Sorenson 2024 - 2025  
Graduate Research Assistant on genetic discovery related to childhood cancer (PI: Logan Spector)
4. Liu Yang 2023 - 2025  
Graduate Research Assistant on develop new prediction models for childhood cancer survivors (MPI: Cindy Im, Tianzhong Yang)
5. Josey Sorenson 2021 - 2024  
Trainee for T32 Statistical Genetics and Genomics Training program (PI: Saonli Basu)
6. Rui Cao 2021 - 2024  
Graduate Research Assistant on methods development in statistical genetics and genomics (PI: Tianzhong Yang, Weihua Guan)
7. Michael Anderson 2023  
Graduate Research Assistant on developing new statistical methods regarding to interpretable predictive model (PI: Weihua Guan, Tianzhong Yang)
8. Bhargob Kakoty 2023  
Teaching Assistant for PUBH 6450
9. Emma Billmyer 2023  
Teaching Assistant for PUBH 6450
10. Estaban Lemus Wirtz 2023  
Teaching Assistant for PUBH 6450
11. Eunsan Kim 2023  
Teaching Assistant for PUBH 6450
12. Lujun Zhang 2022 - 2023  
Graduate Research Assistant on developing new multi-omics predictive model (PI: Weihua Guan, Tianzhong Yang)
13. Tiankai Xie 2022 - 2023  
Graduate Research Assistant on genetic discovery related to childhood cancer (PI: Logan Spector)
14. Zhiyu Kang 2022  
Graduate Research Assistant on developing new statistical

|                                                                                                                                                     |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| methods related to mediation analysis (PI: Tianzhong Yang)                                                                                          |             |
| 15. Lindsay Turner<br>Graduate Research Assistant on CCRF to set up statistical pipelines with application to childhood cancer (PI: Tianzhong Yang) | 2021 - 2022 |
| 16. Haozuo Zhao<br>Teaching Assistant for PUBH 6450                                                                                                 | 2021        |
| 17. Linnea York<br>Teaching Assistant for PUBH 6450                                                                                                 | 2021        |
| 18. Neelanzana Paddle<br>Teaching Assistant for PUBH 6450                                                                                           | 2021        |
| 19. Zhiyu Kang<br>Teaching Assistant for PUBH 6450                                                                                                  | 2021        |

## SERVICE

### Service to the Discipline/Profession/Interdisciplinary Area(s)

#### *Ad Hoc Reviewer*

|                                                                                    |             |
|------------------------------------------------------------------------------------|-------------|
| ASA SSGG Student Paper Award Committee                                             | 2024 - 2025 |
| Student Paper Award Reviewer for Conference on Statistics in Genomics and Genetics | 2025        |

#### *Chair*

|                                                                                                            |      |
|------------------------------------------------------------------------------------------------------------|------|
| Poster Session Chair, Conference on Statistics in Genomics and Genetics                                    | 2025 |
| Chair for Challenges and recent advances in high-dimensional mediation analysis, Joint Statistical Meeting | 2020 |
| Chair for the New Methods in Statistical Genomics and Genetics Section, Joint Statistical Meeting          | 2019 |

#### *Grant Reviewer*

|                                                                             |      |
|-----------------------------------------------------------------------------|------|
| National Institute of Health, Cancer Special Emphasis Panel                 | 2025 |
| St. Baldrick Foundation Research Grants                                     | 2025 |
| National Institute of Health, Biodata Management and Analysis Study Section | 2024 |

#### *Local Organizing Committee member*

|                                                                 |      |
|-----------------------------------------------------------------|------|
| STATGEN 2025: Conference on Statistics in Genomics and Genetics | 2025 |
|-----------------------------------------------------------------|------|

#### *Member*

|                                                                               |      |
|-------------------------------------------------------------------------------|------|
| AACR Award for Outstanding Achievement in Pediatric Cancer Research Committee | 2026 |
| AACR Biostatistics in Cancer Research Task Force                              | 2026 |

#### *Ad Hoc Reviewer*

Bioinformatics  
Biostatistics  
BMC Bioinformatics  
BMC Medical Genetics  
Cancer Epidemiology  
Cancer Research Communications  
Computational Statistics and Data Analysis  
Frontiers in Genetics  
Genetic Epidemiology  
Genetics  
HGG Advances  
Human Genetics  
Journal of Biopharmaceutical Statistics  
Nature Communications  
Nature Genetics  
PLOS Computational Biology  
PLOS Genetics  
PLOS One  
RMD Open  
Statistical Analysis and data mining  
Statistics in Biosciences  
Statistics in Medicine

### **Service to the University/College/Department**

#### **University of Minnesota**

|                                                                        |                |
|------------------------------------------------------------------------|----------------|
| Member, Biostatistics and Health Data Science Seminar Committee        | 2025 - Present |
| Judge, SPH Research Day Poster                                         | 2025           |
| Member, Biostatistics and Health Data Science Recruiting Committee     | 2021 - 2025    |
| Reviewer, Doctoral Dissertation Fellowship Review Committee            | 2023           |
| Member, Biostatistics and Health Data Science Exam Committee           | 2020- Present  |
| Member, Biostatistics and Health Data Science Student Awards Committee | 2020           |

#### **Masonic Cancer Center**

|                                              |                |
|----------------------------------------------|----------------|
| Member, Data Safety and Monitoring Committee | 2025 - Present |
|----------------------------------------------|----------------|