JIAN ZOU

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RESEARCH INTEREST

Development and application of statistical/machine learning methods on clinical and high dimensional omics data

EDUCATION

Ph.D. in Biostatistics — Sep. 2019 – May 2023 (Expected)

School of Public Health, University of Pittsburgh, Pittsburgh, USA

- GPA: 3.93/4.00
- Advisor: George C. Tseng; Co-advisor: Steffi Oesterreich & Adrian Lee
- Thesis: "Various Statistical Modeling and Learning Issues in Omics Data Analysis"

M.Sc. in Biostatistics (Theory and Method track) — Sep. 2017 – May 2019

Mailman School of Public Health, Columbia University, New York, USA

- GPA: 4.00/4.33
- Advisor: Bin Cheng & Ying Wei
- Practicum: "Statistical Evaluation and Selection of Normalization Methods for microRNA Sequencing Data in Cancer Biomarker Studies"

B.Sc. in Biotechnology and Applied Chemistry (Dual Degree) — Sep. 2013 – May 2017

School of Life Science, Central China Normal University (CCNU), Wuhan, China

- GPA: 3.85/4.00
- Advisor: Xu Yang & Rui Li
- Thesis: "Effects of Tea Polyphenols on Neurotoxicity in Mice"

EXPERIENCE

Graduate Student Researcher — Sep. 2019 – Present

UPMC Magee-Womens Research Institute (Advisor: Steffi Oesterreich & Adrian Lee) — *Pittsburgh, USA*

Omics and clinical data analysis in cancer biology

- Multi-omics data analysis for patients with breast cancer before and after hormone therapy
- Analysis of the microenviroment for patients with breast cancer and brain metastasis
- Outcomes evaluation after sentinel lymph node biopsy and radiotherapy in older women with breast cancer
- Great Lakes Breast Cancer Consortium data analysis

Graduate Student Researcher — Sep. 2019 – Present

UPitt Biostat (Advisor: George C. Tseng) — *Pittsburgh, USA*

Machine learning methods and their applications in oncology

- Cancer model evaluation using multi-omics and single cell data
- Constrained model-based clustering
- Congruence analysis between cell lines and human tissues
- Multi-study multi-class concordance analysis

Research Intern Jan. 2019 – May 2019

Memorial Sloan Kettering Cancer Center (Advisor: Li-Xuan Qin) *New York, USA*

Statistical evaluation and selection of normalization methods for microRNA sequencing data

Research Assistant May 2018 – May 2019

Columbia Biostat (Advisor: Ying Wei) *New York, USA*

Dental malpractice data analysis from National Practitioner Data Bank

Research Assistant May 2018 – May 2019

Columbia Biostat (Advisor:Bin Cheng) *New York, USA*

Statistical method development for multivariate count data modeling with a latent variable approach

PUBLICATIONS

†: Co-first author; *: Corresponding/senior author

1. Steffi Oesterreich†*, Azadeh Nasrazadani†, Jian Zou†, Neil Carleton, Tiffany Onger, Matthew D Wright, Yujia Li, Kathryn Demanelis, Bhuvaneswari Ramaswamy, George Tseng, Adrian V. Lee, Nicole Williams*, Megan Kruse*. Clinicopathological Features and Outcomes Comparing Patients with Invasive Ductal and Lobular Breast Cancer, accepted by *Journal of the National Cancer Institute*.

2. Jian Zou†, Yannick Düren†, and Li-Xuan Qin* (2022). PRECISION.seq: An R Package for Benchmarking Depth Normalization in microRNA Sequencing. *Frontiers in Genetics* 12.

3. Neil Carleton, Jian Zou, Yusi Fang, ..., George C. Tseng, Oscar C. Marroquin, Adrian V. Lee*, Priscilla F. McAuliffe* (2021). Outcomes After Sentinel Lymph Node Biopsy and Radiotherapy in Older Women With Early-Stage, Estrogen Receptor–Positive Breast Cancer, *JAMA Network Open* 4(4): e216322-e216322.

4. Terrell E. Jones, Jian Zou, George C. Tseng, Somak Roy, Rohit Bhargava* (2021). The Utility of Next-Generation Sequencing in Advanced Breast and Gynecologic Cancers: Experience of a Large Tertiary Care Women's Hospital, *American Journal of Clinical Pathology* 156(3): 455-460.

5. Li-Xuan Qin*, Jian Zou, Jiejun Shi, Ann Lee, Aleksandra Mihailovic, Thalia A. Farazi, Thomas Tuschl, Samuel Singer (2020). Statistical Assessment of Depth Normalization for Small RNA Sequencing, *JCO Clinical Cancer Informatics* 4 (June): 567-582.

6. Peng Liu, Silvia Liu, Yusi Fang, Xiangning Xue, Jian Zou, George C. Tseng*, Liza Konnikova* (2020). Recent Advances in Computer-assisted Algorithms for Cell Subtype Identification of Cytometry Data, *Frontiers in Cell and Developmental Biology* 8 (April): 234.

In Preparation

7. Jian Zou, George C. Tseng*. Mutual Information for Multi-Study Multi-Class Concordant Biomarker Detection.

8. Jian Zou, Yujia Li, George C. Tseng*. CGMM: A Novel Algorithm for Constrained Model-Based Clustering.

9. Jian Zou, George C. Tseng*. Transcriptomic congruence and selection of representative cancer models towards precision medicine.

10. Wei Zong, Tanbin Rahman, Li Zhu, Xiangrui Zeng, Yingjin Zhang, Jian Zou, Song Liu, Zhao Ren, Jingyi Jessica Li, Steffi Osterreich, Tianzhou Ma, George C. Tseng*. CAMO: A Molecular Congruence Analysis Framework for Evaluating Model Organisms, under review in *PNAS*.

11. Sayali Onkar, Jian Cui, Jian Zou, Carly Cardello, Anthony R Cillo, Mostofa Rafid Uddin, April Sagan, Marion Joy, Hatice U Osmanbeyoglu, Katherine Pogue-Geile, Priscilla F. McAuliffe, Peter C. Lucas, George C. Tseng, Adrian V Lee, Tullia C Bruno, Steffi Oesterreich*, Dario A.A.Vignali*. Immune Landscape in Estrogen Receptor Positive Breast Cancer Reveals a Divergent Macrophage-Driven Microenvironment, under review in *Nature Cancer*.

PRESENTATIONS

1. CGMM: an algorithm for constrained model-based clustering (poster)
   ICSA Applied Statistics Symposium, Florida, June 2022; *Symposium on Data Science & Statistics, Pittsburgh*, June 2022; *ASA Pittsburgh Spring Banquet, Pittsburgh*, April 2022

2. Congruence analysis to optimally select representative cell lines for breast cancer histological subtypes (poster)
   NISS Graduate Student Research Conference, May 2022

3. Congruence analysis between cell lines and tumors (talk)
   Pitt Biostatistics Research Day, March 2022

4. Outcomes after sentinel lymph node biopsy and radiation therapy in elderly women with ER+, early stage breast cancer (poster)
   Pitt GSPH Dean's Day, April 2021

5. Abstract PS11-02: Comprehensive comparative analysis of invasive ductal and lobular breast cancer cases in great lakes breast cancer consortium (3rd author) (poster)
   San Antonio Breast Cancer Symposium, December 2020

6. Abstract PS1-10: Outcomes after sentinel lymph node biopsy and radiation therapy in women over 70 years old with ER+, HER2-, clinically node negative breast cancer (3rd author) (poster)
   San Antonio Breast Cancer Symposium, December 2020

7. Statistical assessment of depth normalization methods for microRNA sequencing (talk)
   11th ICSA International Conference, Hangzhou, December 2019

AWARDS

- Student & Early Career Travel Award, *2022 Symposium on Data Science & Statistics* — April 2022
- The 2022 Mihaela Serban Award for Best Poster Presentation, *ASA Pittsburgh Chapter* — April 2022
- Excellent Graduate, *CCNU* — Jun. 2017
- Second Prize, *National Life Science Innovation Experiment Contest* — Aug. 2016

STATISTICAL SOFTWARE

- MSCC: An R package for Multi-Study Multi-Class Concordance Analysis, available on GitHub
- CASCAM: An R package of Congruence Analysis and Selector of Cancer Models, available on GitHub
- PRECISION.seq: An R Package for Performance Assessment of Depth Normalization Methods in microRNA Sequencing, available on GitHub

TEACHING

- Teaching Assistant, Statistical Methods for Omics Data, *UPitt Biostatistics* — Fall 2022
- Lecturer, Mathematical Methods for Statistics, *UPitt Biostat* — Fall 2021
- Teaching Assistant, Analysis of Categorical Data, *Columbia Biostat* — Summer 2018

ACADEMIC MEMBERSHIP

- Member, *Eastern North American Region, International Biometric Society (ENAR)* — 2022 – Present
- Member, *International Chinese Statistical Association (ICSA)* — 2021 – Present
- Member, *American Statistical Association (ASA)* — 2020 – Present

ACADEMIC SERVICE

- Student Representative, *UPitt Biostat* — 2020 – Present
- Student Representative, *ASA Pitt Chapter* — 2020 – Present
- Member, *ASA SSGG Member Engagement Committee* — 2020 – Present