Runzhi Zhang

CONTACT INFORMATION
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EDUCATION

University of Florida, Gainesville, FL — Aug. 2019 - Present
Ph.D. in Biostatistics
Advisor: Susmita Datta, PhD
Expected graduation time: May, 2023

University of Florida, Gainesville, FL — Aug. 2017 - May 2019
M.S. in Biostatistics
Mentor: Susmita Datta, PhD

Huazhong University of Sci & Tech, Wuhan, China — Sep. 2012 - May 2016
B.A. in Biotechnology

SCHOLARSHIP AND HONOR

ISMB CAMDA 2021 Travel Award	July 2021
ISMB CAMDA 2020 Travel Award	July 2020
Science & Innovation Scholarship	Oct. 2015
Independent Development Scholarship	Oct. 2014
Academic Excellence Scholarship	Nov. 2013

WORK EXPERIENCE

Johnson & Johnson Vision Care, Inc, Jacksonville, FL
Clinical Biostatistics Intern — May 2022 – Aug. 2022

- Implemented linear mixed model to do the benchmarking for contact lens data for several types of contact lens selected
- Applied machine learning method (Classification And Regression Tree) to obtain the distribution of the outcome of different subgroups with a tree-structured plot made
- Used R for data visualization

RESEARCH EXPERIENCE

Department of Biostatistics, University of Florida, Gainesville, FL
Graduate Research Assistant — Aug. 2019 - Present
Supervised by Susmita Datta, PhD

Dissertation project: asmbPLS: Adaptive Sparse Multi-block Partial Lease Square for Survival Prediction using Multi-Omics Data

- Developed a method to obtain the subset of features that are most associated with the outcome and use the selected features for prediction
- Validated the performance and efficiency of the proposed method by using the simulated dataset and the real dataset
- Built R package for the proposed method
- Wrote manuscript

Unraveling T cell response for long term protection of SARS-CoV-2

infection (CAMDA 2021)

- Applied DEseq2 for bulk RNA-seq data to figure out the differential expression genes among early-stage, middle-stage, late-stage COVID-19 patients.
- Used Multilayer Perceptron to predict patient's disease states based on the differentially expressed genes
- Did functional annotation for the detected important genes

Associations between recreational physical activity and mTOR Pathway Protein Expression in Breast Cancer

- Performed data analysis using two-part hurdle model (logistic model for non-zero vs zero, and gamma model for non-zero part)
- Provided interpretation, descriptive statistics, and graphical presentation for collaborators
- Prepared tables and figures for manuscript

Analysis of the impact of SNPs on patients' post-surgery pain

- Used linear mixed model to analyze the longitudinal post-surgery pain data to find out which SNPs are most relevant to the short-term and long-term post-surgery pain
- Given the binarized pain trajectory group assignment for each patient, used the random forest to find the predictive SNPs based on the GWAS data
- Applied the logistic regression to summarize the related SNPs

Unraveling City-Specific Microbial Signatures and Identifying Sample Origins (CAMDA 2019 + CAMDA 2020)

- Processed datasets, such as filtering and normalization
- Used machine learning algorithms (Random Forest, Support Vector Machine, Linear Discriminant Analysis, and Multilayer Perceptron) to classify the microbial sample origin based on the microbial features and city weather data
- Wrote manuscript

TEACHING EXPERIENCE

Department of Biostatistics, University of Florida, Gainesville, FL

Graduate Teaching Assistant Aug. 2019 - Present

- PHC6937: Biostatistical Computing Using SAS, Fall 2019
- PHC6063: Biostatistical Consulting, Spring 2020
- STA6177: Applied Survival Analysis, Fall 2020
- PHC6063: Biostatistical Consulting, Spring 2021
- PHC6089: Public Health Computing, Summer 2021
- PHC6068: Biostatistical Computing, Fall 2021
- PHC6063: Biostatistical Consulting, Spring 2022

PUBLICATIONS

1. Dongyuan Wu, **Runzhi Zhang**, Susmita Datta. Unraveling T cell responses for long term protection of SARS-CoV-2 infection. *Frontiers in Genetics*. 2022.
2. **Runzhi Zhang**, Dorothy Ellis, Alejandro R Walker, Susmita Datta. Unraveling

City-Specific Microbial Signatures and Identifying Sample Origins for the Data From CAMDA 2020 Metagenomic Geolocation Challenge. *Frontiers in pharmacology*. 2021.

3. **Runzhi Zhang**, Alejandro R Walker, Susmita Datta. Unraveling city-specific signature and identifying sample origin locations for the data from CAMDA MetaSUB challenge. *Biology Direct*. 2021.

4. Peter J Carek, Lisa Mims, Stacey Kirkpatrick, Maribeth P Williams, **Runzhi Zhang**, Benjamin Rooks, Susmita Datta, Lars E Peterson, Arch G Mainous III. Does Community-or University-Based Residency Sponsorship Affect Graduate Perceived Preparation or Performance? *Journal of Graduate Medical Education*. 2020.

5. **Runzhi Zhang**, Xi Gao, Hong Bai, Kang Ning. Traditional Chinese Medicine and gut microbiome: Their respective and concert effects on healthcare. *Frontiers in Pharmacology*. 2020.

6. Victoria T Charoonratana, Talia Stewart, **Runzhi Zhang**, Zhigang Li, Martha T DesBiens, Scott Slogic, Maxwell T Vergo. What's in a Do-Not-Resuscitate Order? Understanding the Impact on Pre-arrest Life Support and Factors Influencing Misconceptions. *Journal of General Internal Medicine*. 2019.

7. **Runzhi Zhang**, Xue Zhu, Hong Bai, Kang Ning. Network pharmacology databases for traditional Chinese medicine: review and assessment. *Frontiers in pharmacology*. 2019.

8. Yin-Ying Wang, Hong Bai, **Runzhi Zhang**, Hong Yan, Kang Ning, Xing-Ming Zhao. Predicting new indications of compounds with a network pharmacology approach: Liuwei Dihuang Wan as a case study. *Oncotarget*. 2017.

9. **Runzhi Zhang**, Shao-jun Yu, Hong Bai, Kang Ning. TCM-Mesh: the database and analytical system for network pharmacology analysis for TCM preparations. *Scientific reports*. 2017.

Under Review or In Preparation:

1. Ting-Yuan David Cheng, **Runzhi Zhang**, Zhihong Gong, Bo Qin, Rikki A. Cannioto, Susmita Datta, Weizhou Zhang, Angela R. Omilian, Song Yao, Thaer Khoury, Chi-Chen Hong, Elisa V Bandera, and Christine B. Ambrosone. Association between recreational physical activity and mTOR signaling pathway protein expression in breast tumor tissue. Under review at *Cancer Research Communications*.

2. **Runzhi Zhang**, Susmita Datta. asmbPLS: Adaptive Sparse Multi-block Partial Lease Square for Survival Prediction using Multi-Omics Data. Under review at *BMC bioinformatics*.

SKILLS

Computer: R, SAS, SQL, Linux, Latex, Cytoscape, Endnote, Adobe Illustrator, Adobe Premiere, Microsoft office

Language: English (fluent), Mandarin (native)