Dongyuan Wu

Graduate Student

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Education

University of Florida — Gainesville, FL
Doctor of Philosophy in Biostatistics — *Aug. 2020 - present*

University of Florida — Gainesville, FL
Master of Science in Biostatistics — *Aug. 2018 - May 2020*

Minzu University of China — Beijing, China
Bachelor of Science in Applied Statistics — *Sept. 2013 - July 2017*

Work Experience

Graduate Research Assistant — Gainesville, FL
Department of Biostatistics, University of Florida — *Aug. 2020 - present*

The Role and Mechanisms of Lipid and Lipoprotein Dysregulation in Sepsis
○ Analyzed demographic and clinical data with descriptive statistics, examined the existence of significant differences among different groups of sepsis patients.
○ Aligned RNA sequencing data into expression matrix, did further downstream analyses such as differential expression analysis, gene co-expression network analysis, functional annotation, and so on.

Graduate Teaching Assistant — Gainesville, FL
Department of Biostatistics, University of Florida — *Aug. 2020 - present*

Grading and office hour responsibilities
○ PHC 6052: Introduction to Biostatistical Methods (Fall 2021)
○ PHC 6051: Biostatistical Methods II (Spring 2021)
○ PHC 6020: Clinical Trial Methods (Spring 2021)
○ PHC 6790: Biostatistical Methods Using SAS (Fall 2020)
○ PHC 6050: Statistical Methods for the Health Sciences I (Fall 2020)
○ PHC 6089: Public Health Computing (Fall 2020)

OPS Student Research Assistant — Gainesville, FL
Department of Community Health and Family Medicine, — *May 2019 - Apr. 2020*
University of Florida

○ Collaborated with investigators to identify problems and provided biostatistical consultation including analysis of data, interpretation of results, and preparation of reports.

Research Assistant   Beijing, China
Institute of Basic Research in Clinical Medicine,   *July 2017 - June 2018*
China Academy of Chinese Medical Sciences

○ Provided a variety of statistical analysis for projects using appropriate statistical and computing methodologies, and assisted in the interpretation and presentation of results.
○ Imported data from SQL, generated reproducible templates for adverse drug reaction weekly report, monthly report, and annual report by using R Markdown, and assisted to develop a platform that can automatically display these reports for different drugs.

RESEARCH EXPERIENCE

Immune Cell Responses for Long Term Protection of SARS-COV-2 Infection   Gainesville, FL

Supervisor: Dr. Susmita Datta   *Apr. 2021 - present*

○ Preprocessed datasets, such as filering, normalization, and resampling.
○ Applied MAST for multiple single-cell RNA sequencing data related to immune cells, to figure out the differential expression genes between healthy donors and COVID-19 patients.
○ Made gene co-expression networks using PIDC for healthy donors and COVID-19 patients, separately. Then found the hub genes in modules and detected the differentially connected genes.
○ Built random forests to calculate the Gini importance scores for genes.
○ Did functional annotation for those important genes detected in previous analysis to improve the insight of gene expression associated with immune cells for SARS-COV-2 infection.

Analysis of Alzheimer's Disease scRNAseq Data   Gainesville, FL
Supervisor: Dr. Susmita Datta   *Sept. 2019 - Apr. 2020*

○ Used 2-dimensional t-SNE plots to visualize the single-cell RNA sequencing data.
○ Preprocessed dataset, such as splitting, filtering, normalization, and clustering.
○ Applied hurdle models specifically designed for sequencing-based single-cell gene expression data, including CRE and MAST, to detect differentially expressed genes between AD-pathology and no-pathology.
○ Did network analysis and functional annotation for those differentially expressed genes.

Risk Factors of ADR for a Traditional Chinese Medicine   Beijing, China
Supervisor: Dr. Wei Yang   *Oct. 2016 - May 2017*

○ Processed 30,888 data in advance, such as data cleaning, data standardization.
○ Analyzed all data with descriptive statistics, examined the existence of significant differences between normal group and adverse drug reaction (ADR) group by applying various hypothesis testing methods, and reported the results by using R Markdown.
○ Associated resampling methods, including RUS, ROS, and SMOTE, with classification algorithms, such as decision trees, AdaBoost, random forests, and LASSO, to improve the accuracy of classifiers for the minority class (i.e., ADR group).

Evaluation of TCM Clinical Practice Guidelines   Beijing, China
Supervisor: Dr. Wei Yang   *Aug. 2015 - Sept. 2016*

○ Processed more than 20,000 items of Traditional Chinese Medicine (TCM) data in advance, including data cleaning, data standardization.
○ Analyzed data in 76 TCM syndrome and 11 subjects with descriptive statistics, and reported the results by using R Markdown based on the idea of reproducible research.

PUBLICATIONS	Ellis, D., **Wu, D.**, and Datta, S. (2021). SAREV: A review on statistical analytics of single-cell RNA sequencing data. *Wiley Interdisciplinary Reviews: Computational Statistics*. e1558.
	Wu, D., Ellis, D., and Datta, S. (2020). COVID-19: Reduced Lung Function and Increased Psycho-emotional Stress. *Bioinformation*, 16(4), 293-296.

ORAL PRESENTATIONS	*"UTRCOV2: Unraveling T cell responses for long term protection of SARS-COV-2 infection."* Annual International Conference on Critical Assessment of Massive Data Analysis. July 2021. Virtual.
POSTER PRESENTATIONS	*"COVID-19: Reduced Lung Function and Increased Psycho-emotional Stress."* UF PHHP Research Day. February 2021. Virtual.

SOFTWARES	○ RSBID: Resampling Strategies for Binary Imbalanced Datasets
	○ COVID19FL: Florida's COVID-19 Data Visualization

AWARDS AND HONORS	**Student Travel Award**	*Department of Biostatistics, University of Florida*	*2021*
	Grinter Fellowship	*University of Florida*	*2020*
	Outstanding Master Graduate	*Department of Biostatistics, University of Florida*	*2020*
	Certificate of Excellence	*International Center, University of Florida*	*2019*
	First-class Scholarship (TOP 3%)	*Minzu University of China*	*2017*
	Honorable Mention	*Interdisciplinary Contest in Modeling*	*2016*
	First Prize in Beijing Region	*National Mathematical Modeling Contest*	*2016*
	Wu Xianhong Scholarship	*College of Science, Minzu University of China*	*2015, 2016*

SKILLS	R, SAS, Python, LaTeX, C/C++, WinBUGS, MySQL, Photoshop, Illustrator, MS Office

CERTIFICATES	○ SAS Certified Professional: Advanced Programming Using SAS 9.4 (2020)
	○ SAS Certified Specialist: Base Programming Using SAS 9.4 (2019)
	○ Applied Data Science with Python Specialization by UMich on Coursera (2020)
	○ Genomic Data Science Specialization by JHU on Coursera (2020)
	○ Data Science Specialization by JHU on Coursera (2019)