Siyi Chen, Ph.D.

Research Interests

My research addresses Mendelian randomization/TWAS, causal inference, structural equation modeling, stochastic modeling, species problem, approximate Bayesian computation, Bayesian statistics.

Education

Peking University Beijing, China
Bachelor of Science, Chemistry *July 2013*

Rice University Houston, TX
Master of Science, Statistics *May 2015*

Rice University Houston, TX
Doctor of Philosophy, Statistics *Dec 2020*

Positions and Employment

Department of Statistics, Rice University 2016-2020
Graduate Research Assistant *Houston, TX*

Division of Biostatistics, School of Public Health, University of Minnesota 2021-2023
Post-Doctoral Associate *Minneapolis, MN*

Department of Neurological Sciences, Rush University Medical Center 2023-2024
Instructor *Chicago, IL*

RUSH Alzheimer's Disease Center, Rush University 2023-2024
Biostatistician *Chicago, IL*

Biostatistics & Data Science (BSDS), LSU School of Public Health 2024-present
Assistant Professor *New Orleans, LA*

Research Experience

Postdoctoral research associate 2021-2023
Department of Biostatistics, University of Minnesota *Minneapolis, MN*

- Supervisor: Dr. Wei Pan

Research Assistant 2017-2020
Department of Statistics, Rice University *Houston, TX*

- Supervisor: Dr. Marek Kimmel

- Developed a sequential truncated-population approximate Bayesian computation (ABC) algorithm and applied the ABC methods to symmetric Dirichlet-multinomial model and the proposed asymmetric Dirichlet-multinomial model to estimate hematopoietic stem cells count

Research Assistant 2016-2017
Department of Statistics, Rice University *Houston, TX*

- Simulated barcoding experiments and empirical distributions of the estimators of barcodes number in mice blood cell samples

- Developed a multi-type Markov age-dependent branching process for modeling hematopoietic stem cell expansion

Publications & Manuscripts

Katie A Matatall, Mira Jeong, **Siyi Chen**, Deqiang Sun, Fengju Chen, Qianxing Mo, Marek Kimmel, Katherine King (2016) "Chronic infection depletes hematopoietic stem cells through stress-induced terminal differentiation", *Cell Reports, 17, 2584–2595.*

Siyi Chen, Zhaotong Lin, Xiaotong Shen, Ling Li, and Wei Pan "Inference of causal metabolite networks in the presence of invalid instrumental variables with GWAS summary data," *Genetic Epidemiology (2023)*

Siyi Chen "Statistical modeling for species count data with heterogeneity," https://scholarship.rice.edu/handle/1911/109642

Siyi Chen, Katherine King, Marek Kimmel "Statistical inference from stem cell barcoding data using adaptive approximate Bayesian computation", *Submitted.* https://assets.researchsquare.com/files/rs-187743/v1_covered.pdf?c=1631853488

Presentations

2023 IGES Annual Meeting	Nashville, TN
Presentation	*2023*
STATGEN 2024	Pittsburgh, PA
Presentation	*2024*

Teaching Experience

Teaching Assistant	Rice University
Department of Statistics	*Houston, TX*

- **Mathematical Probability I,** Fall 2015
- **Probability,** Fall 2015 & Fall 2016
- **Probability in Bioinformatics and Genetics,** Spring 2016