

Hanbin Lee

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Keywords

- Evolutionary biology, Population genetics, Stochastic processes, Simulation-based inference

Education

Academic Qualifications.....

- **University of Michigan** **Ann Arbor, MI, USA**
Doctor of Philosophy, Statistics *August 2024 – Present*
- **Seoul National University College of Medicine** **Seoul, Republic of Korea**
Doctor of Medicine *March 2016 – August 2023*
- **Seoul National University** **Seoul, Republic of Korea**
Bachelor of Science, Mathematics *March 2017– August 2023*

Research

First author*, Corresponding author[†]

Works in progress.....

1. **Lee H***, and Terhorst J. "Phylogenetic exchangeable networks for variant effect prediction".
2. **Lee H***, and Terhorst J. "Neural amortized variance component inference in large biobanks".
3. **Lee H***, Pope NS, Kelleher J, Gorjanc G, and Ralph PR. "Modelling complex traits with ancestral recombination graphs".

Preprints.....

1. **Lee H***, Craddock RF, Gorjanc G, and Becher H[†]. "randPedPCA: Rapid approximation of principal components from large pedigrees". *bioRxiv*. 2025. [\[Link\]](#)
2. Lehmann B[†], Lee H, Anderson-Trocme L, Kelleher J, Gorjanc G, and Ralph PR. "On ARGs, pedigrees, and genetic relatedness matrices". *bioRxiv*. 2025. [\[Link\]](#)

Journals.....

1. **Lee H***[†], and Han B[†]. "Pseudobulk with proper offsets has the same statistical properties as generalized linear mixed models in single-cell case-control studies". *Bioinformatics*. 2024. [\[Link\]](#)
2. **Lee H***[†], and Han B[†]. "FastRNA: an efficient solution for PCA of single-cell RNA sequencing data based on a batch-accounting count model". *American Journal of Human Genetics*. 2022. [\[Link\]](#)

3. **Lee H^{*†}**, and Han B[†]. "A theory-based practical solution to correct for sex-differential participation bias". *Genome Biology*. 2022. [\[Link\]](#)
4. **Kim C^{*}**, **Lee H^{*}**, Jung JH, Jung KH[†], and Han B[†]. "MarcoPolo: a method to discover differentially expressed genes in single-cell RNA-seq data without depending on prior clustering". *Nucleic Acids Research*. 2022. [\[Link\]](#)

Professional Experience

Journal reviewer.....

- *International Journal of Epidemiology, Nature Communications, Genetics (GSA), Human Genetics and Genomics Advances*

Teaching.....

- *Computational Methods in Statistics and Data Science (STATS 406, Winter 2025)*
- *Statistics and Artificial Intelligence (DATASCI 315, Fall 2024)*

Healthcare.....

- **Association of Physicians for Humanism** **Busan, Republic of Korea**
Primary care physician 2022 – 2024

Industry.....

- **Seoul Broadcasting System (SBS)** [\[Link\]](#) **Seoul, Republic of Korea**
Developed poll aggregators for the 2022 presidential election 2021 – 2022

Talks and Presentations

- **Modelling complex traits with ancestral recombination graphs** [\[Link\]](#)
Probabilistic Modelling in Genomics 2025, Cold Spring Harbor Laboratory March 2025
- **Analyzing millions of cells within a laptop via sparse computation**
Channing Laboratory, Harvard Medical School September 2023
- **Exposing the underlying randomness of genetic inference**
Przeworski Lab, Columbia University September 2023
- **On the cause of inflated type 1 error in single cell DEG**
Korea Genome Organization Symposium 2023 January 2023
- **FastRNA: scalable PCA for scRNA-seq with batch-accounting count model**
American Society of Human Genetics 2022 October 2022

Awards and Honors

- **MSSISS Best Oral Presentation**
University of Michigan 2025
- **Hamchoon Award for Research**
Seoul National University College of Medicine 2023
- **Physician Scientist Research Award** **First Place**
Seoul National University College of Medicine 1 out of 143 graduates, 2023

- Park Jong-Wan Future Scientist Award**
Seoul National University College of Medicine

First Place
1 out of 143 graduates, 2023
- Best Presentation Award**
Korea Genome Organization 19th Winter Symposium

Second Place
2023
- Physician Scientist Training Grant**
Seoul National University College of Medicine

2022 – 2023
- Undergraduate Research Grant**
Seoul National University

2021
- Shin Chang-Jae Scholarship**
Kyobo Life Insurance Co., Ltd

2019 – 2021
- Eminence Scholarship**
Seoul National University

2017 – 2019

Technical skills

- **Programming Languages:** Python, R, C/C++, HTML/CSS, and Javascript