

# June En-Yu Lai Ph.D.

## Contact Information

Institute of Statistical Science, Academia Sinica.  
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## Education

Ph.D. Bioinformatics, National Yang Ming University & Academia Sinica, TIGP\*, 2017.  
B.S. Biotechnology and Laboratory Science in Medicine, National Yang Ming University, 2008.

## Research

### TOPICS OF INTEREST

*Bioinformatics* – Quantitative Proteomics and Genomics, NGS Sequence Analysis especially in Structural Variation, Development of Bioinformatic Algorithms, Networks and Pathways Analysis, Annotation and Enrichment Analysis.  
*Biostatistics* – Causal Inference and Mediation Analysis, Statistical Genetics, Clinical Meta Analysis.  
*Analytic Philosophy* – Metaphysical Causation and Causal Models, Formal Epistemology and Modal Logics, Theology.

### DOCTORAL DISSERTATION

*Functional Analysis for Quantitative Proteomic Data.*  
Advisor: Kun-Pin Wu.  
Committee: Hsuan-Cheng Huang, Yi-Hau Chen, Wailap Victor Ng, Hsin-Chou Yang, and Kun-Pin Wu.

### PUBLICATIONS IN REFEREED JOURNALS

*Causal inference in the multiverse of hazard.*  
Yen-Tsung Huang and **En-Yu Lai**.  
– under review.

*Massively parallel multi-mediator analyses under a composite null.*  
**En-Yu Lai** and Yen-Tsung Huang.  
– in revision.

*Natural killer cells influence the clearance of SARS-CoV-2*  
Wan-Chen Hsieh, **En-Yu Lai**, Yu-Ting Liu, Yi-Fu Wang, Yi-Shiuan Tzeng, Lu Cui, Yun-Ju Lai, Hsiang-Chi Huang, Jia-Hsin Huang, Hung-Chih Ni, Dong-Yan Tsai, Jian-Jong Liang, Chun-Che Liao, Ya-Ting Lu, Laurence Jiang, Ming-Tsan Liu, Yao-Ming Chang, Gerlinde Wernig, Chia-Wei Li, Kuo-I Lin, Yi-Ling Lin, Huai-Kuang Tsai, Yen-Tsung Huang, and Shih-Yu Chen  
– Journal of Clinical Investigation (2021+) accepted.

*Estimating the causal effect of embryo transfer day on clinical in vitro fertilization outcomes using propensity score matching.*  
Han-Chih Hsieh, Chun-I Lee, **En-Yu Lai**, Jia-Ying Su, Yi-Ting Huang, Wei-Lin Zheng, Chien-Hong Chen, Chun-Chia Huang, Pin-Yao Lin, Maw-Sheng Lee, Mark Liu and Yen-Tsung Huang  
– BMC Pregnancy and Childbirth (2021+) accepted.

*A mediator analysis for a binary non-rare outcome with sequentially ordered multiple mediators.*  
**En-Yu Lai**<sup>†</sup>, Stephanie Shih<sup>†</sup>, Yen-Tsung Huang, and Shunping Wang.  
– Statistics in Medicine (2020) Volume 39, Issue 10, Pages 1415-1428.

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\*Taiwan International Graduate Program by Academia Sinica.

<sup>†</sup>Equally contributed.

*A knowledge-based  $T^2$ -statistic to perform pathway analysis for quantitative proteomic data.*

**En-Yu Lai**, Yi-Hau Chen, and Kun-Pin Wu.

– PLoS Computational Biology (2017) Volume 13, Issue 6, e1005601.

*Drug class, renal elimination, and outcomes of direct oral anticoagulants in Asian patients: A meta-analysis.*

Kang-Ling Wang, Chun-Chih Chiu, Robert Giugliano, Doreen Tan, Chun-Yi Lin, **En-Yu Lai**, Shinya Goto, and Chern-En Chiang.

– Journal of Stroke and Cerebrovascular Diseases (2018) Volume 27, Issue 4, Pages 857-864.

*Once- or twice-daily mon-vitamin K antagonist oral anticoagulants in Asian patients with atrial fibrillation: A meta-analysis of randomized controlled trials.*

Kang-Ling Wang, Chun-Chih Chiu, Doreen Su-Yin Tan, Chun-Yi Lin, **En-Yu Lai**, Shinya Goto, Robert P. Giugliano, and Chern-En Chiang.

– Journal of the Formosan Medical Association (2017) Volume 116, Issue 8, Pages 591-598.

*Extracranial arterial and venous thromboembolism in patients with atrial fibrillation: A meta-analysis of randomized controlled trials.*

Kang-Ling Wang, Harry R. Büller, Shinya Goto, Chun-Yi Lin, **En-Yu Lai**, Chun-Chih Chiu, Chern-En Chiang, and Robert P. Giugliano.

– Heart Rhythm (2017) Volume 14, Issue 4, Pages 599-605.

*Standard versus low dose non-Vitamin K antagonist oral anticoagulants in asian patients with atrial fibrillation: A meta-analysis of contemporary randomized controlled trials.*

Kang-Ling Wang, Robert P. Giugliano, Shinya Goto, Chun-Chih Chiu, Chun-Yi Lin, **En-Yu Lai**, and Chern-En Chiang.

– Heart Rhythm (2016) Volume 13, Issue 12, Pages 2340-2347.

*A linear-time algorithm for reconstructing zero-recombinant haplotype configuration on a pedigree.*

**En-Yu Lai**, Wei-Bung Wang, Tao Jiang, and Kun-Pin Wu.

– BMC Bioinformatics (2012) Volume 13, Supplement 17, S19.

#### BOOK CHAPTER

*Causal models.*

**En-Yu Lai**, Wen-Fang Wang.

– accepted.

#### INVITED TALKS / CONFERENCE TALKS

*Massively parallel multi-mediator analyses under a composite null.*

– South Taiwan Statistics Conference (STSC) 2021 in Kaohsiung, oral presentation

– ISMB/ECCB 2021 virtual conference, poster presentation

– South Taiwan Statistics Conference (STSC) 2020 in Chiayi, oral presentation

*A mediator analysis for a binary non-rare outcome with sequentially ordered multiple mediators.*

– Chinese Statistical Association Taiwan (CSAT) Annual Meeting 2019 in Hsinchu, oral presentation

*Mediation analyses of ultraviolet, air pollution, and structural variations using the Taiwan Biobank.*

– ICSA International Conference 2019 in Hangzhou, oral presentation

– South Taiwan Statistics Conference (STSC) 2019 in Taichung, oral presentation

– ISI-ISM-ISSAS Joint Conference 2019 in Taipei, oral presentation

– Program in Quantitative Genomics (PQG) 2018 in Boston, poster presentation

*A genetic algorithm to locate responsive subpathways for time-course proteomic data.*

– HUPO 2016 in Taipei, oral presentation

*A knowledge-based  $T^2$ -statistic to perform pathway analysis for quantitative proteomic data.*

– ISMB/ECCB 2017 in Prague, poster presentation

– Taiwan Proteomics Society (TPS) Annual Meeting 2014 in Taipei, poster presentation

– RECOMB 2013 in Beijing, poster presentation

*A linear-time algorithm for reconstructing zero-recombinant haplotype configuration on a pedigree.*

– InCoB 2012 in Bangkok, oral presentation

– ISMB 2010 in Boston, poster presentation

#### SCIENTIFIC SOFTWARE

PGCtest: Identifying phenome-genome functional clusters. [to submit]

<https://github.com/roqe/PGCtest>

**MACtest**: Multi-mediator analyses under a composite null. [to submit]

<https://github.com/roqe/MACtest>

**SOMM**: Mediation analysis with sequentially ordered multiple mediators. [Statistics in Medicine, 2020]

<https://github.com/roqe/SOMM>

**T2GA**: Pathway analysis under a self-contained null. [PLoS Computational Biology, 2017]

<https://github.com/roqe/T2GA>

**KCHI**: A linear-time algorithm for haplotype inference. [BMC Bioinformatics, 2012]

<https://github.com/roqe/KCHI>

## Experiences

### POSTDOCTORAL FELLOW

*Variant component test on a model of causally ordered multiple mediators.*

– In Dr. Huang’s lab at Institute of Statistical Science, Academia Sinica, 2018 – present.

*Analysis of structure variation using the Taiwan Biobank NGS data.*

– In Dr. Huang’s lab at Institute of Statistical Science, Academia Sinica, 2017 – present.

### CONSULTANT

*Cooperation Center of Statistics and Data Science at Academia Sinica*, Nov 2019 – present.

*General Clinical Research Center at Taipei Veterans General Hospital*, Jan 2016 – Sept 2017.

### LECTURER

TIGP-MBAS/MCB/MM 2019-2022: Biostatistics

Summer 2018: Introduction to statistical learning with applications in R

### TEACHING ASSISTANT

Autumn 2015: Introduction to statistical learning and data mining

Spring 2014: Bioinformatic algorithms; Machine learning and statistical inference

Autumn 2012: An overview of computer science

Autumn 2010: Basic molecular biology; Algorithms and data structures

### RESEARCH ASSISTANT

*Algorithm development of gene ontology, network module and pathway analysis for quantitative proteomic data.*

– In Dr. Wu’s lab at Institute of BioMedical Informatics, National Yang Ming University, 2015 – 2017.

– In Dr. Chen’s lab at Institute of Chemistry, Academia Sinica, 2012 – 2015.

*Algorithmic studies of protein identification with glycosylation.*

– In Dr. Wu’s lab at Institute of BioMedical Informatics, National Yang Ming University, 2008 – 2009.

### VISITING RESEARCHER

*A linear-time algorithm for reconstructing zero-recombinant haplotype configuration on a pedigree.*

– In Dr. Jiang’s lab at Bioinformatics Division, TNLIST<sup>‡</sup>, Beijing, Summer 2009.

### INTERNSHIP

Medical Technologist at *Taipei Veterans General Hospital*, July 2007 – January 2008.

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<sup>‡</sup>Tsinghua National Laboratory for Information Science and Technology

#### MISCELLANEOUS

Translator at *Research Ethics Education*, Jun 2014 – Mar 2015.

Database developer at *MSI Taiwan*, Jan 2013 – Mar 2014.

## Honors & Awards

#### FELLOWSHIPS

Academia Sinica Postdoctoral Fellowship, July 2020 – June 2022 (proposal acceptance rate: ~30%).

Academia Sinica Postdoctoral Fellowship, December 2018 – June 2020 (proposal acceptance rate: ~30%).

NSC and ISCB Travel Grant for attending *RECOMB 2013*.

NSC and APBioNET Travel Grant for attending *InCoB 2012*.

NSC Travel Grant for attending *ISMB 2010*.

TIGP Doctoral Fellowship, September 2009 – August 2012.

NYMU Student Exchange Fellowship for internship at *TNLIST* during 2009 summer.

## References

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