

YI-YUAN (IAN) LEE

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EDUCATION

Cornell University

Ph.D. in Computational Biology

Ithaca, NY

Expected 2025

Carnegie Mellon University

M.S. in Computational Biology, School of Computer Science

Pittsburgh, PA

May 2020

National Taiwan University

B.S. in Biochemical Science and Technology

Taipei, Taiwan

June 2014

PUBLICATIONS

- **Yi-Yuan Lee** et. al, HypoRiPPAtlas as an Atlas of hypothetical natural products for mass spectrometry database search, Nature Communications, 2023.
- Richa Rastogi, Yair Schiff, Alon Hacohen, Zhaozhi Li, **Ian Lee**, Yuntian Deng, Mert R. Sabuncu, Volodymyr Kuleshov, "Semi-Parametric Inducing Point Networks and Neural Processes", ICLR poster presentation, 2023.
- Jung-Lin Wu et. al, including **Yi-Yuan Lee**, "Phosphoproteomics Reveals the Role of Constitutive KAP1 Phosphorylation by B-Cell Receptor Signaling in Chronic Lymphocytic Leukemia", Molecular Cancer Research, 2022.
- Liu Cao, Mustafa Guler, Azat Tagirdzhanov, **Yi-Yuan Lee**, Alexey Gurevich, Hosein Mohimani, "MolDiscovery: Learning Mass Spectrometry Fragmentation of Small Molecules", Nature Chemical Biology, 2021.
- Michelle et. al, including **Yi-Yuan Lee**, "A community resource for paired genomic and metabolomic data mining", Nature Chemical Biology, 2021.
- W.C. Su, S.-F. Hsu, **Y.-Y. Lee**, et al., "A Nucleolar Protein, Ribosomal RNA Processing 1 Homolog B (RRP1B), Enhances the Recruitment of Cellular mRNA in Influenza Virus Transcription", Journal of Virology, 2015.

PATENT AND AWARD

- Behsaz Bahar et. al, including **Yi-Yuan Lee**, "System for Identifying Structures of Molecular Compounds from Mass Spectrometry Data", U.S. Patent application 20220208540, June 30 2022 (pending)
- Part of the DOE award, "DE-SC0021340: Discovery of Signaling Small Molecules (e.g. quorum sensing molecules) from the Microbiome, PI: Mohimani, Hosein. (2021)".

DIVERSITY, EQUITY AND INCLUSION

Event: Expanding Your Horizons (EYH) Cornell

Volunteer

Cornell University

Spring 2023

- Volunteered in EYH event to encourage high school student to pursue a career in STEM.

Event: Consider Cornell

Mentor

Cornell University

Fall 2022

- Mentored undergraduate mentees from diverse backgrounds in graduate school application.

RESEARCH EXPERIENCE

Computational Biology Field, Cornell University

Ph.D. student

Sep 2021 - Now

Prof. Ilana Brito Ph.D.

- Developing a computational pipeline for discovering novel host-microbiome protein-protein interaction.
- Analyzing immunological responses to various gut microbes via single cell RNA sequencing data.
- Mentoring undergraduate students.

Computational Biology Department, Carnegie Mellon University

Graduate Research Associate

Sep 2018 - May 2021

Prof. Hosein Mohimani Ph.D.

- Developed deep neural networks for discovering novel ribosomally synthesized and post-translationally modified peptides (RiPPs), a class of natural products from microbial genomes. Both models are written in PyTorch and outperform the state-of-the-art models in similar tasks.
- Implemented a subgraph-isomorphism-based chemical structure predictor, which generates hypothetical structures given a core peptide and a list of tailoring enzymes. Written in C++ and Rust.
- Mentored three undergraduate students in research of *in silico* natural product discovery.

Genomics Research Center, Academia Sinica, Taiwan

Research Assistant

Aug 2015 - May 2018

Prof. Kuo-I Lin Ph.D.

- Project 1: “The role of B cell receptor (BCR) signaling in chronic lymphocytic leukemia (CLL).”
 - Established four drug-resistant clones for drug-resistance study.
 - Identified a kinase responses to BCR activity and stimulates the downstream transcriptional factor activation.
- Project 2: “The role of diSia motif in B cell immunity.”
 - Identified the role of alpha-2,8-sialyltransferase 6 (ST8-6) in acute inflammatory response.
- Project 3: “The function of galectin-8 in colon cancer.”
 - Performed extra splenic injection to confirm the anti-cancerous activity of galectin-8 with IVIS system.
 - Conducted animal experiments for lab members, and trained new lab members experimental techniques.

National Taiwan University, Taiwan

Jan 2013 - June 2014

Undergraduate Volunteer

Prof. Bi-Fong Lin, Ph.D., Bor-Luen Chiang, M.D./Ph.D.

- Confirmed the effect of additional nutrients on mesenchymal stem cells' (MSCs) immunoregulatory ability.

National Institute of Genetics (NIG), Japan

July 2012 - Sep 2012

Summer Intern

Prof. Inoue Ituro, M.D.

- Identified the mutation of *KDM5B* is one of the causalities of ovarian cancer.

Institute of Molecular Biology, Academia Sinica, Taiwan

Jan 2012 - June 2012

Undergraduate Volunteer

Prof. Michael M.C. Lai, M.D./Ph.D.

- Supported the postdoctoral researcher to identify the role of human gene RRP1B in the infection and replication of *influenza A virus*. The result was published on Journal of Virology in 2015.

Institute of Molecular Biology, Academia Sinica, Taiwan

July 2011 - Sep 2011

Summer Intern

Prof. Meng-Chao Yao, Ph.D.

- Verified the chromosome breakage executing time is later than dsRNA guided DNA deletion in *Tetrahymena thermophila* duplication.

LEADERSHIP AND ACTIVITIES

Department of Life Science, National Taiwan University

Feb 2014 - June 2014

Teaching Assistant in Biotechnological Core Techniques Course

- Coached students to complete molecular biology experiments.

Department of Information Management, Executive Government, Taiwan

Aug 2014 - July 2015

Substitutive Military Service

Supervisor: Ming-Chung Lee

- Launched the guiding system and official website of History Exhibit in Executive Yuan.
- Solved problems of exigent program and system, and managed SVN subversion system.

iGEM NTU-Taiwan Team, Hong Kong

Dec 2012 - Oct 2013

Team-leader

Advisor: Chern, Edward Yen-Rong

- Established a new iGEM team, recruited interdisciplinary members in NTU and raised funding.
- Awarded silver medal in the competition. Designed a biological heating device by transformed *SrUCP* into *Saccharomyces cerevisiae* and simulated the regulation circuit with different types of promoters by computational model. Enhanced about 150% heat production in our device. (Website: 2013.igem.org/team:NTU_Taiwan/index.html)

Novartis Biocamp, Taiwan

May 2014 - May 2014

Participant

Organizer: Novartis Taiwan

- Only 30 students was selected out each year in Taiwan from various backgrounds.
- Acquired knowledge about how pharmaceutical industry works and worked with group members to create a business plan of hypertension drug.

SKILLS

Programming Language	Python, C, C++, Go, Bash, Rust
Bioinformatics	BLAST, BWA, SAMTools, Scanpy/Seurat, HMMER
Deep Learning	PyTorch, TensorFlow, Scipy, Numpy, Panda, Sklearn, modAL, RDkit
Development Tools	Linux, AWS, Git, Slurm, L ^A T _E X, VIM, tmux