

Curriculum Vitae

**Name**

Chien-Yu Chen

Current Position

Professor and Chair
Department of Biomechatronics Engineering
National Taiwan University

Email address

chienyuchen@ntu.edu.tw

Education & Professional Experiences

B.S. degree of **Electrical Engineering**, National Taiwan University (1992/9 ~ 1996/6)

M.S. degree of **Electrical Engineering**, Stanford University (1996/9 ~ 1998/1)

Ph.D degree of **Computer Science and Information Engineering**, National Taiwan University (1999/9 ~ 2003/7)

Logic Design Engineer, VIA Technologies, Inc. (1998/2 ~ 1999/8)

Assistant Professor, Graduate School of Biotechnology and Bioinformatics, Yuan Ze University (2004/2 ~ 2005/7)

Genomic AI Chief Scientist, Taiwan AI Labs, (2019/2 ~ 2020/1)

Research Interests

Bioinformatics, machine learning, multi-omics data analysis, gene regulation, genomic medicine

Selected Publications

1. Yi-Chen Huang#, Yen-Nien Chen# (equal contribution), An-ko Chung, Yu-An Chen, Pei-Lung Chen, Tang-Long Shen, **Chien-Yu Chen***, and Han-Mo Chiu*, Whole Exome Sequencing-identified Germline Variants Underlie High Familial Risk and Early-onset Colorectal Cancer in Taiwan, *Clinical Gastroenterology and Hepatology*, Vol. 24, Issue 3, 835-846, 2026.
2. Bo-Han Wei, Xavier Cheng-Hong Tsai, Kuo-Jui Sun, Min-Yen Lo, Sheng-Yu Hung, Wen-Chien Chou, Hwei-Fang Tien, Hsin-An Hou, and **Chien-Yu Chen***, Annotation-free deep learning for predicting gene mutations from whole slide images of acute myeloid leukemia, *npj Precision Oncology*, Vol. 9, 35, 2025. (SCI Categories: ONCOLOGY, 37/242=15.3%, 5-year JIF=7.7)
3. Emadeldin Hassanin*, Ko-Han Lee, Tzung-Chien Hsieh, Rana Aldisi, Yi-Lun Lee, Dheeraj Bobbili, Peter Krawitz, Patrick May, **Chien-Yu Chen*** and Carlo Maj*, Trans-ancestry polygenic models for the prediction of LDL blood levels: an analysis of the United Kingdom Biobank and Taiwan Biobank, *Frontiers in Genetics*, 14, 2023.
4. Jun-Liang Lin#, Tsung-Ting Hsieh# (equal contribution), Yi-An Tung# (equal contribution), Xuan-Jun Chen, Yu-Chun Hsiao, Chia-Lin Yang*, Tyng-Luh Liu*, **Chien-Yu Chen***, ezGeno: An Automatic Model Selection Package for Genomic Data Analysis, *Bioinformatics*, 38(1), 30-37, 1 January 2022.

5. Ko-Han Lee, Yu-Chuan Chang, Ting-Fu Chen, Hsueh-Fen Juan, Huai-Kuang Tsai, and **Chien-Yu Chen***, Connecting MHC-I-binding motifs with HLA alleles via deep learning, *Communications Biology*, 4(1194), 2021.

Lecture Title

AI-Driven Immunogenomics: A Scalable Single-Cell Framework with Structural Validation

Abstract

Deciphering the molecular basis of immune recognition is a cornerstone of modern biophysics and systems immunology. While single-cell sequencing provides unprecedented resolution of immune repertoires, predicting functional interaction outcomes from high-dimensional genomic data remains a significant computational challenge. In this talk, I will present an AI-driven immunogenomics pipeline that integrates multi-omic single-cell data with individual genetic backgrounds. Our framework utilizes geometric deep learning to systematically screen cellular interactions at a single-cell resolution. To ensure biophysical accuracy, we employ protein foundation models to perform atomic-level structural validation of identified candidates, bridging the gap between sequence-level observations and mechanistic physical insights. This integrative approach offers a scalable solution for uncovering pathogenic mechanisms in complex immune-mediated conditions. By linking high-throughput immunogenomics with advanced structural modeling, our framework provides a robust platform for advancing precision medicine and evaluating drug-induced immune responses.