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PENGHSUAN (TIMO) HUANG

PHD CHEMIST

PROFESSIONAL SUMMARY

Analytical PhD chemist with 9+ years of advanced mass spectrometry experience across ADCs, proteomics, glyco/phospho-PTMs, and small molecule characterization. Proven expertise in therapeutic protein characterization, biomarker discovery, and analytical method development in academic and industrial settings. Published researcher with 5 first/co-first and 10+ co-author papers in high-impact journals (Nature Methods, Nature Communications, ACS Central Science, Analytical Chemistry). **Legal status: US Green Card holder.** Able to relocate.

EDUCATION

AUG 2021 – MAY 2026

PhD in Chemistry, University of Wisconsin-Madison, Madison, USA

Advisor: Prof. Lingjun Li

SEP 2016 – JUN 2020

BSc in Chemistry, National Taiwan University, Taipei, Taiwan

Advisor: Prof. Cheng-Chih Richard Hsu

EMPLOYMENT HISTORY

MAY 2025 – AUG 2025

PhD Internship, Regeneron Pharmaceuticals, Inc., Tarrytown, NY

Mentors: Tao Xing, Yuetian Yang, Shunhai Wang

- Developed and executed an online electrochemical reduction method with IEX separation for middle-down mAb analysis, producing measurable improvements in charge variant profiling.
- Optimized MS/MS fragmentation using ETHcD and PTCR to increase sequence coverage and localize site-specific PTMs on CDR regions, directly supporting candidate characterization workflows.

JAN 2022 – PRESENT

Graduate Research Assistant, University of Wisconsin-Madison, Madison, WI

ADC Characterization & Targeted Protein Degradation Analysis

- Designed and executed isobaric tagging quantitative proteomics to validate RIPK1-targeting degraders, contributing to a *Journal of Medicinal Chemistry* publication.
- Optimized mass spectrometry methods for intact mass characterization of ADCs with DBCO-PEG3-NHS and azido-PEG linkers to support *Nature Communications* and *Angewandte Chemie* studies.
- Developed top-down MS workflows for intact mass and site-specific identification of NHS-PEG12-azide labeling on LYTACs, enabling an *Advanced Science* publication.

MS Structural Elucidation: Metabolites, Lipids, and Glycans

- Established FFPE and fresh-frozen tissue extraction workflows for LC-MS structural elucidation of metabolites, lipids, and glycans and built an in-house spectral library supporting *Nature Methods* and *Nature Communications* papers.
- Adapted and applied the spectral library for on-tissue in situ MALDI-IM-MS/MS structural elucidation to enhance spatial chemical analysis.

Bottom-up DIA/DDA Proteomics | LC-MS/MS Lipidomics

- Developed and validated diaPASEF and ddaPASEF data-independent acquisition methods for comprehensive proteome profiling to study developmental biology and biomineralization.
- Established a surface-bound protein isolation protocol for secretome characterization and biomarker identification enabling protein-protein interaction analysis and GO enrichment.
- Designed and optimized a high-throughput phospholipid enrichment method using ITO-coated slides to increase sample screening capacity for LC-MS/MS and MALDI-IM-MS.
- Developed and optimized MALDI-2 with ion mobility MS on Bruker timsTOF fleX for improved lipid identification and structural characterization.

Undergrad Research Assistant & Full-time Scientist, National Taiwan University, Taipei, Taiwan

- Designed and synthesized novel dual-polarity MALDI matrices enabling both positive and negative ion detection from single sample preparation with optimized matrix performance across multiple tissue sample types.
- Applied for and received US patent (US20210066060A1, 2021) based on novel matrix technology.

SKILLS

Bruker TimsToF fleX	Thermo Orbitrap Fusion Lumos/Exploris/Eclipse	Sciex ZenTOF 8600/ QQQ 5500	Antibody characterization
Proteomics Protein PTMs	UHPLC-MS/MS	Biomarker discovery	Small molecule characterization
IEX chromatography	Isobaric tag quantitation	MaxQuant Fragpipe	Protein Metrics ProSight Native
Proteome Discoverer Byonic	DIA-NN Skyline	MALDI-TOF/TOF	R Python Matlab

ADDITIONAL INFORMATION**Selected Publications & Patent**

5 First/Co-First Author, 10+ co-author publications, 4 review papers

Full list: [Google Scholar](#) | [ORCID: Penghsuan Huang](#)

- **Huang, P.**; Sardina, J.; Lu, H.; Currie, C.R.; Li, L. Proteome-wide analysis and surface protein isolation for secretome characterization: leaf-cutter ant *Acromyrmex echinatior*. *Analytical Chemistry* 2025, 97 (51), 28281-28291. [Supp. Cover](#)
- **Huang, P.**; Zhang, H.; Liu, Y.; Li, L. Rapid Characterization of Phospholipids using ITO-Coated Slide Assisted Enrichment MALDI Mass Spectrometry. *Analysis & Sensing* 2024, 4 (3). [link](#)
- **Huang, P.**; Huang, C. Y.; Lin, T. C.; Lin, L. E.; Yang, E.; Lee, C.; Hsu, C. C.; Chou, P. T. Toward the Rational Design of Universal Dual Polarity Matrix for MALDI Mass Spectrometry. *Analytical Chemistry* 2020, 92 (10), 7139-7145. [link](#)
- Patent: Hsu, C.-C.; Chou, P.-T.; Lee, C.; **Huang, P.**; et al. Use of Anthranilic Acid Derivative as Matrix for MALDI Mass Spectrometry. US20210066060A1 (2021). [link](#)
- Additional: 4 oral & 8 poster conference presentations

Scientific Leadership & Mentorship

- Instrument Manager & Scientific Leader | Li Research Lab, UW-Madison | Mar 2022 – Present
 - Managed Bruker TimsToF fleX: routine maintenance, user training, technical troubleshooting for 10+ lab members.
 - Mentored 2 graduate students through research project completion: guided experimental design and supported manuscript preparation; wrote and maintained standard operating procedures (SOPs) for the MS instrument.
- Co-Organizer | Wisconsin HUPO 2024 & IMSIS 2024 | Trainee Organizing Committee
 - Co-led logistics/coordination for scientific conferences; engaged 100+ attendees and cross-institutional collaborators.
- Team Leader | 2019 Winter Chemistry Camp, National Taiwan University | Sept 2018 – Feb 2019
- Analytical/General Chemistry Course Teaching Assistant | UW-Madison Department of Chemistry | Sept 2021 – June 2023

Fellowships & Awards

- Travel Grant, Graduate Student Faculty Liaison Committee (GSFLC), UW-Madison | April 2025
- Educational Grant, Association for Mass Spectrometry & Advances in the Clinical Lab (MSACL) | Mar 2024
- Student Research Grants Competition, Conference Presentation Funds, UW-Madison | Mar 2024
- LCY Group College Student Research Award, Outstanding Academic Performance, LCY Chemical Corp. | Mar 2021
- Suu-Nien Fu Award for Bachelor Degree Thesis, 1st Place in all graduates of Class 2020, NTU | June 2020
- Outstanding Undergraduate Student Poster Award, National Taiwan University | June 2020
- Travel Grants for International Academic Exchanges, TSMS & NTU | Feb 2020, May 2020
- Young Scientist Forum Best Presenter, 8th Asia-Oceania Mass Spectrometry Conference | Jan 2020