

Curriculum Vitae

**Name**

Chun-Wei Tung, Ph.D. (童俊維)

Current Position

Investigator

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Education & Professional Experiences

- 2021/08 - present, Investigator, Institute of Biotechnology and Pharmaceutical Research, National Health Research Institutes, Miaoli County, Taiwan
- 2020/08 - 2021/07, Associate Dean, College of Management, Taipei Medical University, Taipei, Taiwan
- 2020/08 - 2021/07, Director, International Ph.D. Program in Biotech and Healthcare Management, Taipei Medical University, Taipei, Taiwan
- 2019/02 - 2021/07, Associate Professor & Professor, Graduate Institute of Data Science, College of Management, Taipei Medical University, Taipei, Taiwan
- 2012/03 - 2012/05, Visiting scholar, Center for Bioinformatics, National Center for Toxicological Research (NCTR), FDA, Jefferson, AR, USA
- 2011/08 - 2019/03, Assistant Professor & Associate Professor, School of Pharmacy, College of Pharmacy, Kaohsiung Medical University, Kaohsiung, Taiwan
- 2008/09 - 2009/08, Visiting scholar, Wilhelm Schickard Institute for Computer Science, Eberhard Karls University Tübingen, Tübingen, Germany
- 2005/08 - 2010/07, PhD, Institute of Bioinformatics, National Chiao Tung University, Hsinchu, Taiwan
- 2001/08 - 2005/06, B.S., Department of Biology, National Cheng Kung University, Tainan, Taiwan

Research Interests

Development of artificial intelligence and database techniques with applications to the prediction of function and toxicity of biological and chemical molecules

Selected Publications

1. W.C. Huang, H.P. Hsieh and C.W. Tung* (2025) Integrating Machine Learning and Protein-Ligand Interaction Profiling for the Discovery of METTL3 Inhibitors, *Scientific Reports*, 15, 36789.
2. H.L. Kan, S.S. Wang and C.W. Tung* (2025) ZFinfer: A Novel Chemical-Phenotype Inference System for Zebrafish for Filling Data Gaps in Environmental Pollutant Research, *Ecotoxicology and Environmental Safety*, 302, 118682.
3. R.H. Lin, P. Lin, C.C. Wang and C.W. Tung* (2024) A Novel Multitask Learning Algorithm for Tasks with Distinct Chemical Space: Zebrafish Toxicity Prediction as an Example, *Journal of Cheminformatics*, 16(1), 91.
4. W.C. Huang, W.T. Lin, M.S. Hung, J.C. Lee and C.W. Tung* (2024) Decrypting orphan GPCR drug discovery via multitask learning, *Journal of Cheminformatics*,

- 16(1), 10.
5. Y.W. Chiu, C.W. Tung* and C.C. Wang* (2024) Multitask learning for predicting pulmonary absorption of chemicals, *Food and Chemical Toxicology*, 185, 114453.

Lecture Title

AI-Enabled Drug Discovery for Orphan GPCRs

Abstract (500 words maximum)

Drug discovery increasingly relies on AI to explore complex biological systems and vast chemical spaces. Yet two major challenges persist: the scarcity of biological data for orphan GPCRs and the diversity of chemical space across datasets. These limitations hinder conventional single-task and multitask models from learning meaningful patterns or predicting mechanisms.

To address this, we developed multitask and transfer learning strategies tailored for low-data and high-diversity contexts. Our AI-enabled orphan GPCR drug discovery platform leverages shared structural and physicochemical features across GPCR families, enabling applicability assessment for orphan receptors. In addition, multitask methods support the identification of safer drug candidates by integrating toxicity considerations into early screening.

Together, these methods demonstrate that biologically informed multitask and transfer learning frameworks are potential to overcome data gaps and chemical diversity. They provide scalable and interpretable solutions for AI-driven drug discovery, advancing therapeutic development for orphan GPCRs.