

Chih-Chuang Liaw

Institution National Sun Yat-sen University
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Research Interests

Natural Products Chemistry, Phytochemistry, Organic Spectroscopy

Educational Background

- 2004 Ph.D. Graduate Institute of Pharmaceutical Sciences, Kaohsiung Medical University, Kaohsiung, Taiwan
- 1995 M.S. Graduate Institute of Marine Resources, National Sun Yat-sen University, Kaohsiung, Taiwan
- 1992 B.S. Department of Marine Resources, National Sun Yat-sen University, Kaohsiung, Taiwan

Professional Experiences

- 2026- Distinguished Professor of Marine Biotechnology and Resources, National Sun Yat-sen University
- 2016-2025 Professor at Department of Marine Biotechnology and Resources, National Sun Yat-sen University
- 2018-2021 Chairman of Department of Marine Biotechnology and Resources, National Sun Yat-sen University
- 2016-2019 Director at Joint Doctoral Degree Program of Marine Biotechnology at National Sun Yat-sen University and Academia sinica
- 2012-2016 Associate Professor at Department of Marine Biotechnology and Resources, National Sun Yat-sen University
- 2010-2012 Assistant Professor at Department of Marine Biotechnology and Resources, National Sun Yat-sen University
- 2006-2010 Assistant Professor at Graduate Institute of Pharmaceutical Chemistry, China Medical University
- 2005-2006 Assistant Professor at Department of Cosmetic Science, Chia-Nan University of Pharmacy and Science, Tainan
- 2004-2005 Post-Doctoral Research Fellow at Graduate Institute of Natural Products, Kaohsiung Medical University, Kaohsiung
- 2002-2003 Visiting Scholar at School of Pharmacy, University of North Carolina at Chapel Hill (under the advisement of Professor Kuo-Hsiung Lee, Natural Products Research Laboratory)

Selected Publications

Please list 3-5 publications.

1. Setya Widi Ayuning Permanasari, Hsiu-Chin Lin, Jia-Ying Lin, Mao-Xuan Hong, Hsin-Yang Chang, Wen-Di He, Li-Hwa Lo, Yu-Liang Yang, Tse-Ming Lee, and **Chih-Chuang Liaw**,* “MALDI-TOF MS Classification of Formosan Thraustochytrids and Their Use in Shrimp Farming”, *Journal of Agricultural and Food Chemistry* **2026**, 74, 10747-10758.
2. Kuan-Ying Lai, Ping-Jyun Sung, Jyh-Horng Sheu, Tzu-Hsuan Tu, Shao-Liang Hsu, Crystal J. McRae, and **Chih-Chuang Liaw***, Natural products from soft corals in Taiwan: insights into chemical taxonomy and potential interaction in marine environments, *Marine Biotechnology* **2025**, 27, 130. <https://doi.org/10.1007/s10126-025-10509-x>
3. Mo Aqib Raza Khan, Bo-Wei Wang, Hsiu-Chin Lin, Yu-Liang Yang, **Chih-Chuang Liaw**,* Structure-functional activity of pyrone derivatives for inhibition of barnacle settlement and biofilm formation, *Marine Biotechnology* **2024**, 26, 1000-1008, <https://doi.org/10.1007/s10126-024-10349-1>.
4. Sio-Hong Lam, Hui-Kang Liu, Shih-Yuan Chung, Jia-Ling Chang, Mao-Xuan Hong, Sheng-Chu Kuo, **Chih-Chuang Liaw**,* Diterpenoids and Their Glycosides from the Stems of *Tinospora crispa* with beta-cell Protective Activity. *Journal of Natural Products* **2023**, 86, 1437–1448.
5. **Chih-Chuang Liaw**,* Li-Hua Lo, Tien-Hsing Cheng, Yuen Ting Chan, Yu-Ru Huang, Andrew H.-J. Wang, Hsin-Yang Chang,* Biosynthesis of Vitroprocines by α -Oxoamine Synthase and Oxidoreductase Identified from *Vibrio* sp. QWI-06. *Organic Letters* **2022**, 24, 3281-3285.

Short CV/biograph

Dr. Chih-Chuang Liaw embarked on his academic journey in the field of bioactive natural products derived from Chinese herbal medicine during his doctoral studies. He was advised by Professor Yang-Chang Wu at Kaohsiung Medical University from 2000 to 2004, and later by Professor Kuo-Hsiung Lee at the School of Pharmacy, University of North Carolina at Chapel Hill, during 2002-2003. His effort during the Ph. D. program aimed to explore the bioactive components of phytomedicine and traditional Chinese herbal remedies. After earning his PhD, Dr. Liaw joined the faculty of Department of Cosmetic Sciences at Chia-Nan University of Pharmacy and Science from 2005 to 2006, focusing on the application of herbal medicine in cosmeceutical products. Subsequently, Dr. Liaw continued his academic pursuits at China Medical University, where he served as a faculty member in the Graduate Institute of Pharmaceutical Chemistry from 2006 to 2010. Here, his research delved into the bioactive constituents of folk medicine and ferns to clarify their medicinal properties.

Since 2010, Dr. Liaw has been a vital member of the Department of Marine Biotechnology and Resources at National Sun Yat-sen University. In this role, he has spearheaded research projects centered on the exploration of biofunctional natural products derived from marine microbes, with a particular focus on the discovery of antimicrobial compounds and antifouling agents. His ongoing research endeavors encompass discovering the functional natural products from marine bioresource, structure elucidation, structure-activity optimization, as well as mechanism-of-action studies. Besides, Dr. Liaw is also interested in phytomedicine and traditional Chinese medicine. Furthermore, he is actively involved in the modification of bioactive compounds for potential medicinal and industrial applications, thus bridging the gap between scientific discovery and practical implementation.

台灣海洋天然物的發展：過去、現在與未來展望

Marine Natural Products Research in Taiwan: Past, Present, and Future Perspectives

摘要：

海洋生物，如軟珊瑚、海綿及微生物，可產生多樣化的次級代謝物。這些天然物分子雖非生物維持生命所必需，卻在防禦與生態競爭中扮演關鍵角色，因此已成為新藥研發的重要來源。天然物研究需整合化學、生物與醫學等跨領域方法，透過萃取、活性篩選及結構鑑定等程序，將天然分子轉化為具藥理活性的候選藥物。典型案例包括由芋螺毒素衍生之止痛藥，以及源自海鞘的抗癌藥物。此外，臺灣在海洋天然物研究方面已累積豐碩成果，顯示其海洋生物資源於未來藥物開發中具備高度潛力。

Abstract:

Marine organisms, including soft corals, sponges, and microorganisms, produce a diverse array of secondary metabolites. Although these natural products are not essential for basic survival, they play crucial roles in defense and ecological competition, and have emerged as valuable sources for drug discovery. Research on natural products requires an interdisciplinary integration of chemistry, biology, and medicine, involving processes such as extraction, bioactivity screening, and structural elucidation to transform natural compounds into pharmacologically active drug candidates. Representative examples include analgesics derived from cone snail toxins and anticancer agents originating from tunicates. Furthermore, Taiwan has made significant contributions to the field of marine natural products, highlighting the strong potential of its marine biodiversity for future pharmaceutical development.