年輕學者
研究成果獎

陳韻晶

國立清華大學生物醫學工程研究所教授

代表著作：

- Yun-Chieh Sung, Pei-Ru Jin, Li-An Chu, Fu-Fei Hsu, Mei-Ren Wang, Chih-Chun Chang, Show-Jen Chiou, Jiantai Timothy Qiu, Dong-Yu Gao, Chu-Chi Lin, Yu-Sing Chen, Yi-Chiung Hsu, Jane Wang, Fu-Nien Wang, Pei-Lun Yu, Ann-Shyn Chiang, Anthony Yan-Tang Wu, John Jun-Sheng Ko, Charles Pin-Kuang Lai, Tsai-Te Lu*, **Yunching Chen***, 2019, “Delivery of Nitric Oxide with a Nanocarrier Promotes Tumour Vessel Normalization and Potentiates Anti-Cancer Therapies”, *Nature Nanotechnology*, 14, 1160–1169.
- Kuan-Wei Huang, Fu-Fei Hsu, Jiantai Timothy Qiu, Guann-Jen Chern, Yi-An Lee, Chih-Chun Chang1, Yu-Ting Huang, Yun-Chieh Sung, Cheng-Chin Chiang, Rui-Lin Huang, Chu-Chi Lin, Trinh Kieu Dinh, Hsi-Chien Huang, Yu-Chuan Shih, Donia Alson, Chun-Yen Lin, Yung-Chang Lin, Po-Chiao Chang, Shu-Yi Lin*, **Yunching Chen***, 2020, “Highly Efficient and Tumor-Selective Nanoparticles for Dual-Targeted Immunogene Therapy against Cancer”, *Science Advances*, 6(3), eaax5032.
- Chun-Hung Liu, Guann-Gen Chern, Fu-Fei Hsu, Kuan-Wei Huang, Yun-Chieh Sung, Hsi-Chien Huang, Jiantai Timothy Qiu, Chu-Chi Lin, Chien-Hsun Wu, Han-Chung Wu, Jia-Yu Liu, **Yunching Chen***, 2018, “A multifunctional nanocarrier for efficient TRAIL-based gene therapy against hepatocellular carcinoma with desmoplasia.”, *Hepatology*, 67(3), 899-913.

簡評：

陳韻晶博士以小鼠肝癌模式，利用一氧化氮奈米載體，將惡性腫瘤血管「正常化」使血管擴張、促進血液流通，並解決抗癌藥物無法長時間穩定釋放，讓一氧化氮釋放達數天，提高抗癌藥物及免疫細胞成功進入癌組織，提供癌症治療新穎平台及抗癌新療法，此研究發表於 2019 年自然奈米技術期刊。陳博士也開發一種含磷酸鈣標靶肝癌的奈米載體以輸送可毒殺癌細胞的 TRAIL 蛋白，緩解肝硬化病程，成果發表於 2018 年肝臟學期刊並獲選為當期封面。另研發輸送 PD-L1 siRNA 和 IL-2 質體並調節腫瘤免疫 STING–cGAS 途徑，活化腫瘤微環境中殺手 T 細胞，進而達到免疫治療效果，成果發表於 2020 年科學進展期刊。陳博士跨領域的研究團隊結合生醫、材料、化工等領域，研發新型癌症治療策略，可期待新藥物開發應用於臨床，研究成果深具國際影響力。

簡歷：

Dr. Yunching Chen has received her Ph.D. degree in Pharmaceutical Sciences at the University of North Carolina at Chapel Hill in May 2010. She completed her doctoral thesis under the supervision of Dr. Leaf Huang and developed various novel nanoparticle formulations to deliver RNA therapeutics and chemotherapy drugs for cancer therapy. She later worked with Drs. Rakesh Jain and Dan Duda as a research fellow of Radiation Oncology at Harvard Medical School and Massachusetts General Hospital. She found the tumor stroma plays an important role on immunosuppression, drug resistance, and cancer cell survival and metastasis. Dr. Chen joined the faculty of National Tsing Hua University as a tenure-track Assistant Professor in 2013. She rose through the ranks to Associate Professor in 2016 and to Professor in 2020. She is also serving as an Associate Editor for Journal of Controlled release (JCR). Her work provides a molecular understanding for effective combination therapeutic approaches and develops various nanoscale drug/gene/protein delivery systems for the treatment of cancer and liver fibrosis. She has published 40 journal papers with nearly 4700 citations and an h-index of 27. Dr. Chen received a number of awards including Young Investigator Awards from Liposome Research Days, Asian Biomaterials Congress and TienTe Lee Biomedical Foundation, AAPS Biotechnology Graduate Student Symposium Award, Ta-You Wu Memorial Award, Promising Women in Science Award from Wu Chieh Shiung Education Foundation. Dr. Chen's unique work on the development of gene and drug carrier is reflected through the 7 patents awarded in Taiwan and US and the 2 other patents that are pending approval.

代表作簡介：

我們開發腫瘤標靶藥物 / 基因輸送載體，解決抗癌藥物無法長時間穩定釋放，腫瘤利用率過低等問題。近期研究對於一氧化氮於癌症治療的應用帶來關鍵技術的突破，成功開發可長時間持續釋放一氧化氮之奈米載體 NanoNO，能有效地將一氧化氮輸送至腫瘤微環境中。研究顯示 NanoNO 能驅使腫瘤血管構造和功能正常化並進而提高小分子抗癌藥物、大分子蛋白藥物和免疫療法在原位肝癌和遠端轉移肝癌的治療效果。此新型的奈米級一氧化氮遞送系統最大的突破為有效且穩定控制腫瘤血管正常化，且安全性極佳，成為未來在癌症治療上一個新的平台。研究成果發表於 Nature Nanotechnology。我們團隊奠基於基礎癌症醫學研究，深入探討腫瘤微環境的抗藥機制，提出有效的治療策略，推展至藥物開發並期最終能應用於臨床。

得獎感言：

首先要誠摯感謝評審們的肯定。我們組成跨領域團隊，透過降低腫瘤纖維化，正常化腫瘤血管功能，激活免疫等策略，欲解決目前臨床上所面對的癌症抗藥性，轉移，和免疫治療效果不佳等問題。感謝清華大學、科技部和國衛院的大力支持。感謝學生們的熱情和毅力成就了這些成果。也要特別感謝魯才德教授、林淑宜研究員、夏克山研究員和許多前輩與同仁們的幫助，讓我與團隊得以順利地進行研究。最後要感謝家人的支持，並和我攜手在這塊土地上默默耕耘。