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研究：

1. 以臨床質譜技術 (Clinical Mass Spectrometry) 從事精準醫療研究。
2. 光動力療法之醫學研究 (Medical Research on Photodynamic Therapy, (PDT)) 以可見光光動力平台，偕同慈濟醫學中心皮膚科洪崧壬醫師研發新抗菌藥物。

研究室精密儀器大致上可以分為兩大類，包括質譜儀與微量分離的儀器設備。

質譜儀：「液相層析串聯質譜儀 (LC/MS-MS)」、「氣相層析串聯質譜儀(GC/MS-MS)」與「基質輔助雷射脫附游離飛行時間質譜儀 (MALDI-TOF MS)」。

分離儀器：「毛細管電泳儀 (CE)」、「液相層析儀 (HPLC)」、膠體電泳儀、PCR、「吹捕熱脫附(Purge & Trap Thermo-desorption)」、「頂空採樣儀 (Headspace) 裝置」、冷凍乾燥機(Freeze Drying)、真空離心乾燥機(Speedvac) 及高速離心機等。

感謝慈濟基金會、慈濟醫學中心、慈濟大學及科技部多年的研究計畫補助，使我們能持續且專注於研究上，特別是在抗藥性病原菌的研究上，這些研究同時發展了研究室對生物分子指標的快術辨識能力，以生物質譜分析技術為基礎進行抗菌等相關的研究，其中對致病菌的抗菌藥物及其衍生物化合物的合成、鑑定與殺菌力之研發，都有具體的貢獻，包含相關衍生的生物分析成果，5年間共發表超過20篇 SCI 論文及原文書專章，其中 Q1期刊過半，並於2022年篇名為 Using Gas Chromatography and Mass Spectrometry to Determine 25-Hydroxyvitamin D Levels for Clinical Assessment of Vitamin D Deficiency 的研究論文，獲 JFDA 期刊(IF=6.157, 42/361, PHARMACOLOGY & PHARMACY) “2021年被引用次數最多的10篇文章”之一。

筆者在慈濟大學醫檢系任教，結合系上資源與醫學中心合作，成立皮膚抗菌與代謝生物指標研發團隊，以可見光作為手段，發展光動力療法研究。成功開發出對藍色可見光具敏感性、生物選擇性及專一性較好的光敏劑，尋找出替代抗生素的光動力療法。團隊利用以 LED 藍光激發不具毒性的光敏劑產生自由基 (reactive oxygen species, ROS) 進而毒殺致病菌，並以光動力療法的光化學特質為基礎，探討光對致病性微生物影響，並以正常細胞為對照，在不影響正常細胞下，找尋最適當的殺菌或抑菌條件，開發新的抗菌方法，而不致誘導菌體產生抗藥性。我們以生物分析技術監測光照菌體後分泌的之化學物質，觀察細胞細菌經光照後的形態及生化分子變異，經由串聯質譜分析定序，解釋光解產生何功能性蛋白質體及酮基化之變異，探究菌體的作用機轉(成果發表於 Rapid Communications in Mass Spectrometry RCM 2019)。這些抗菌成果已陸續於2018年2月及9月皆以通訊作者發表兩篇文章於國際生物物理知名期刊”Journal of Photochemistry and Photobiology B-Biology” IF= 6.814, 8/72, BIOPHYSICS，論文一發表即引起廣泛的重視，並受到多次引用，目前開發的殺菌劑及殺菌方法，文章” Efficient Photodynamic Killing of Gram-Positive Bacteria by Synthetic Curcuminoids”也發表在 Q1期刊 International Journal of Molecular Sciences，IF=6.208, 69/296, BIOCHEMISTRY & MOLECULAR BIOLOGY，專利申請已通過。

團隊研究是以臨床應用為目的，雖然這個終極目標施行非常困難，但是我們團隊一步一步的朝這個方向前進，前期研究成果除了申請專利及投稿 Q1期刊外，未來期待發展檢驗技術應用於診間診療、診斷及評估用藥，提升醫學發展，提供高效率且低副作用的診療；長程目標期望開發出技術移轉與專利授權，貢獻台灣生技醫藥開發，具有治療作用與產業價值之醫檢新技術。

學經歷：

- 慈濟大學 醫學檢驗生物技術學系 教授 2014.02-迄今
- 台灣質譜學會第六屆理事 2018-迄今
- 台灣層析暨分離科技學會第4屆及第5屆理事 2016-迄今
- 經濟部標準檢驗局 國家標準技術委員會 委員 2011.07-迄今
- 財團法人全國認證基金會(TAF) 評審員 2017.7-迄今
- 國立東華大學 化學系 兼任副教授 2009.08-2010.07
- 慈濟大學 醫學檢驗生物技術學系 副教授 2007.08-2014.01
- 慈濟大學 濫用藥物檢驗中心 主任 2007.08-2009.07
- 慈濟大學 運動員禁藥檢驗中心分析組組長 1996.09-1998.04
- INRS-Institut Armand-Frappier 研究 Montreal, Quebec, Canada 1996 & 1997
- 工研院 工業安全衛生技術發展中心 副研究員 1991.07-1992.09\
- 『勞工衛生管理師』安瑞勞師衛證字第2506號 1992.02
- National Dong Hwa University, Ph.D., 2007.01 Analytical Chemistry
- National Cheng Kung University, M.S., 1991.06 Analytical Chemistry
- Chung Yuan University, B.S., 1987.07 Chemical Engineer



研究計畫：

1. 生化質譜技術於醫學檢驗之分析應用 (NSC 98-2113-M-320-002-MY2)，擔任計畫主持人。
2. 以現代質譜法研發偵測結核桿菌的新技術 (TCIRP 99002-02Y3)，擔任子計畫主持人。
3. 台灣水產品之內生性海洋藻毒素的調查與檢測 (NSC 100-2113-M-130-001-MY2)，擔任共同計畫主持人。
4. 藍光抗菌研究 (MOST 103-2113-M-320 -001)，擔任計畫主持人。
5. 以藍光為基礎之抗菌研究 (MOST 104-2113-M-320 -002)，擔任計畫主持人。
6. 素食營養與健康 (TCMMPSP104-08-04)，擔任整合計畫總主持人。
7. 素食者與雜食者皮膚老化及血管粥狀硬化與否之關鍵生化指標檢測技術(TCMMPSP104-01-04)，擔任子計畫共同計畫主持人。
8. 藍光抗菌的應用與基礎研究 (MOST 105-2113-M-320-002)，擔任計畫主持人。
9. 健康素食之關鍵身體代謝指標的建立與比較 (TCMMP105-13-02)，擔任計畫主持人。
10. 藍光輔助抗菌產品的研發與基礎研究 (MOST 106-2113-M-320-001)，擔任計畫主持人。
11. 光動力療法之抗菌研究(MOST 108-2113-M-320-001)，擔任計畫主持人。
12. 薑黃衍生物與可見光動力療法聯合應用的抗菌研究(TCRD109-77)，擔任共同計畫主持人。
13. 薑黃衍生物合併藍光光動力治療應用於皮膚常見真菌之抗菌研究(TCRD110-20)，擔任共同計畫主持人。
14. 生物分子的直接奈灑游離質譜技術的開發研究(MOST 110-2113-M-320-001)，擔任計畫主持人。
15. 開發石墨烯基底的直接奈灑游離質譜技術來檢測生物指標分子(MOST 111-2113-M-320 -001)，擔任計畫主持人。

榮譽：

1. 2022 年篇名 "Using Gas Chromatography and Mass Spectrometry to Determine 25-Hydroxyvitamin D Levels for Clinical Assessment of Vitamin D Deficiency" 獲 *JFDA* 期刊 "2021 年被引用次數最多的 10 篇文章" 之一，此刊為 SCI, IF= 6.157, 42/361, PHARMACOLOGY & PHARMACY。
2. 2020 年獲 107 學年度優良教學獎。
3. 2019 年食品暨藥物分析研討會-臺灣公定分析化學家協會(AOAC) 第九屆第二次會員大會暨學術研討會優秀論文獎, "尿液中合成卡西酮類 GC/MS/MS 分析方法優化"。

專利：

1. 胡安仁、施增廉、洪崧壬、陳灝平、殺菌劑及殺菌方法 (Bactericide and Bactericidal Method)，中華民國專利發明第I748646 號 (2021/12/1-2040/9/10)。
2. **Hu, Anren**; Mahamad, Akiful Haque; Marapakala, Akiful Haque; Puchakayala, Muralidhar Reddy; Rondla, Rohini; Sundara Moorthy, Revathy; Vallakeerthi, Narmada, 用於維生素D缺乏評估的新型靈敏先進的臨床質譜試劑盒 (Neuartiges empfindliches und fortschrittliches klinisches Massenspektrometrisches Kit zur Bewertung des Vitamin-D-Mangels) 德國專利(Bundesrepublik Deutschland Urkunde) 實用新型第 20 2022 105 300 號

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1. Pandiyarajan Anand, Atul Verma, Yi-An Hong, **Anren Hu**, Dhayanantha Prabu Jaihindh, Ming-Show Wong*, Yen-Pei Fu* (2022 Oct), Morphological and elemental tuning of BiOCl/BiVO₄ heterostructure for uric acid electrochemical sensor and antibiotic photocatalytic degradation, *Chemosphere*, doi: <https://doi.org/10.1016/j.chemosphere.2022.136847>. (SCI, IF=8.943, 33/279, ENVIRONMENTAL SCIENCES). MOST 110-2113-M-320-001.
2. A. Sanjeev, N. N. Reddy, S. Bhaskar, R. Rohini, A. K. Raju, B. V. Kumar, **A. Hu***, and P. M. Reddy* (2022 Mar), Synthesis and Anticancer Activity of 3,4,5-Trimethoxycinnamide-Tethered 1,2,3-Triazole Derivatives, *Russian Journal of Organic Chemistry*, 58, 87–93; doi:10.1134/S1070428022010122. (SCI, IF=0.862, 49/56, ORGANIC CHEMISTRY). MOST 110-2113-M-320-001. 本人為通訊作者。
3. Nadipolla Naresh Reddy, Sung-Jen Hung, Merugu Kumara Swamy, Ananthula Sanjeev, Vankadari Srinivasa Rao, Rondla Rohini, Atcha Krishnam Raju, Kuthati Bhaskar, **Anren Hu***, Puchakayala Muralidhar Reddy*, (2021 Mar), Synthesis and Rational Design of New Appended 1,2,3-Triazole-Uracil Ensembles as Promising Anti-Tumor Agents via In Silico VEGFR-2 Transferase Inhibition, *Molecules*, 26, 1952; doi: /10.3390/molecules26071952. (SCI, IF= 4.927, 65/179, MULTIDISCIPLINARY CHEMISTRY). MOST 108-2113-M-320-001. 本人為通訊作者。
4. Hsin Yen Tsai, Yu-Tzu Huang, Cing-Ling Kuo, Chia-Jou Kuo, **Anren Hu**, Jih-Jung Chen, Tzeng-Lien Shih*, (2021 Feb), A case study of the iodine-mediated cyclization of C2'-OH- and C2-OH-chalcones toward the synthesis of flavones: Reinvestigation of the mechanisms, *Journal of the Chinese Chemical Society*, 68, 1334–1338. <https://doi.org/10.1002/jccs.202000482> (SCI, IF= 1.967, 119/179, MULTIDISCIPLINARY CHEMISTRY). MOST 108-2113-M-320-001.
5. Sung-Jen Hung, Yi-An Hong, Kai-Yu Lin, Yi-Wen Hua, Chia-Jou Kuo, Anren Hu*, Tzeng-Lien Shih*, and Hao-Ping Chen*, (2020 Nov), Efficient Photodynamic Killing of Gram-Positive Bacteria by Synthetic Curcuminoids, *International Journal of Molecular Sciences*, 21, 9024; doi:10.3390/ijms21239024. (SCI, IF=5.923, 67/298, BIOCHEMISTRY & MOLECULAR BIOLOGY). MOST 108-2113-M-320-001. 本人為通訊作者。
6. **胡安仁**, 洪逸安, 洪崧壬, (2020 Aug), 光動力療法對皮膚傷口感染之應用, *感染控制雜誌*, 30, 259-270, DOI : 10.6526/ICJ.10.6526/ICJ.202008_30(4).0005, MOST 108-2113-M-320-001.
7. Sateesh Reddy K., Siva Bandi; Divya Reddy S., Naresh Reddy N., Pratap T.V., Venkateswara Rao B., Hong Yi-An, Vijaya Kumar B., Krishnam Raju A., Muralidhar Reddy P.*, **Anren Hu*** (2020 May), In situ FTIR Spectroscopic Monitoring of the Formation of the Arene Diazonium Salts and its Applications to Heck-Matsuda Reaction. *Molecules*, 25, 2199; doi:10.3390/molecules25092199. (SCI, IF=4.927, 65/179, MULTIDISCIPLINARY CHEMISTRY). MOST 108-2113-M-320-001. 本人為通訊作者。
8. Aye Aye Khine, Ming-Yeh Yang, **Anren Hu**, Guang-Huey Lin, Yee-Huan Toh, Hao-Ping Chen* (2020 May), Production of optically pure (–)-borneol by *Pseudomonas monteilii* TCU-CK1 and characterization of borneol dehydrogenase involved. *Enzyme and Microbial Technology*, 139, 109586; doi: 10.1016/j.enzmictec.2020.109586 (SCI, IF=3.448, 49/156, BIOTECHNOLOGY & APPLIED MICROBIOLOGY). MOST 108-2113-M-320-001.
9. A. Sanjeev, S. Bhaskar, Narmada Vallakeerthi, M. Kavitha, **Anren Hu***, P. Muralidhar Reddy* (2020 Jan), Development and Validation of RP-HPLC Method in Simultaneous Estimation of Lamivudine and Abacavir as Tablet Dosage Form, *Journal of critical reviews*, 7, 1358-1370; doi:10.31838/jcr.07.02.229. MOST 108-2113-M-320-001.
10. Ramesh Pulabala, Srinivasa Rao Vankadari, Yi-An Hong, Muralidhar Reddy P.*, **Anren Hu*** (2019 Aug), Molecular design, synthesis and biological evaluation of 2-hydroxy-3-chrysin dithiocarbamate derivatives. *Molecules*, 24, 3038; doi:10.3390/molecules24173038. (SCI, IF=4.927, 65/179, MULTIDISCIPLINARY CHEMISTRY). MOST 108-2113-M-320-001. 本人為通訊作者。
11. Kai-Chih Chang, Ya-Yun Chang, Meng-Jiun Lai*, **Anren Hu***, (2019 Aug), Identification of carbonylated proteins in a bactericidal process induced by curcumin with blue light irradiation on imipenem-resistant *Acinetobacter baumannii*, *Rapid Communications in Mass Spectrometry*, DOI:10.1002/rcm.8548 (SCI, IF=2.200, 15/42, SPECTROSCOPY) MOST 108-2113-M-320-001. 本人為通訊作者。
12. Ming-Yeh Yang, Ching-Yuan Huang, Tina H. T. Chiu, Kai-Chih Chang, Ming-Nan Lin, Liang-Yu Chen*,

- Anren Hu***, (2019 Jan), Using Gas Chromatography and Mass Spectrometry to Determine 25-Hydroxyvitamin D Levels for Clinical Assessment of Vitamin D Deficiency, *Journal of Food and Drug Analysis*, 27, 494-501 (SCI, IF=4.727, 13/139, FOOD SCIENCE & TECHNOLOGY) MOST 106-2113-M-320-001. 本人為通訊作者.
13. Chia-Jung Hsieh, Yu-Hsun Chang, **Anren Hu**, Mei-Lien Chen, Chien-Wen Sun, Risanti Febrine Situmorang, Ming-Tsang Wu*, Shu-Li Wang* (2019 Jan), Personal care products use and phthalate exposure levels among pregnant women, *Science of the Total Environment*, 648, 135-143 (SCI, IF=6.551, 22/265, ENVIRONMENTAL SCIENCES) MOST 106-2113-M-320-001.
 14. Ming-Yeh Yang, AA Khine, JW Liu, HC Cheng, **Anren Hu***, Hao-Ping Chen*, Tzeng-Lien Shih*, (2018, Nov), Resolution of Isoborneol and its Isomers by GC/MS to Identify “Synthetic” and “Semi-synthetic” Borneol Products. *Chirality*, 30, 1233-1239 (SCI, IF=2.171, 29/57, ORGANIC CHEMISTRY) MOST 106-2113-M-320-001. 本人為通訊作者.
 15. Ming Yeh Yang, Kai-Chih Chang, Liang-Yu Chen*, **Anren Hu*** (2018 Sep). Low-Dose Blue Light Irradiation Enhances the Antimicrobial Activities of Curcumin against Propionibacterium acnes, *Journal of Photochemistry and Photobiology B-Biology*, 189, 21-28 (SCI, IF= 4.383, 13/71, BIOPHYSICS) MOST 106-2113-M-320-001. 本人為通訊作者.
 16. Ming-Yeh Yang, Kai-Chih Chang, Liang-Yu Chen, Po-Ching Wang, Chih-Chiang Chou, Zhong-Bin Wu, **Anren Hu*** (2018 Feb). Blue light irradiation triggers the antimicrobial potential of ZnO nanoparticles on drug-resistant *Acinetobacter baumannii*, *Journal of Photochemistry and Photobiology B-Biology*, 180, 235-242, (SCI, IF=4.383, 13/71, BIOPHYSICS) MOST 106-2113-M-320-001. 本人為通訊作者.
 17. Kai-Chih Chang, Chin-Yi Chung, Chen-Hsing Yeh, Kuo-Hsiu Hsu, Ya-Ching Chin, Sin-Siang Huang, Bo-Rong Liu, Hsi-An Chen, **Anren Hu**, Po-Chi Soo, Wen-Ping Peng*, (2018 Apr). Direct detection of carbapenemase-associated proteins of *Acinetobacter baumannii* using nanodiamonds coupled with matrix-assisted laser desorption/ionization time-of-flight mass spectrometry, *Journal of Microbiological Methods*, 147, 36-42, (SCI, IF=1.707, 60/77, BIOCHEMICAL RESEARCH METHODS) MOST 105-2113-M-320-002.
 18. Chien-Yu Lin, Pau-Chung Chen, Chia-Jung Hsieh, Chao-Yu Chen, **Anren Hu**, Fung-Chang Sung, Hui-Ling Lee* & Ta-Chen Su* (2017, Mar). Positive Association between Urinary Concentration of Phthalate Metabolites and Oxidation of DNA and Lipid in Adolescents and Young Adults, *Scientific Reports*, 7:44318, DOI: 10.1038/srep44318 (SCI, IF=3.998, 17/71, MULTIDISCIPLINARY SCIENCES) MOST 105-2113-M-320-002
 19. Huei-Ru Lin, **Anren Hu**, Meng-Jiun Lai, Chih-Wei Chiang, Chao-Chuan Liao, Kai-Chih Chang* (2016, Dec). Rapid and sensitive detection of carbapenemase activity in *Acinetobacter baumannii* using superficially porous liquid chromatography-tandem mass spectrometry, *Journal of Microbiology Immunology and Infection*, 49, 910-917 (SCI, IF=3.493, 33/93, INFECTIOUS DISEASES) MOST 104-2113-M-320-002.
 20. Hoi-Lung Tsang, Jui-Lin Huang, Yu-Hsuan Lin, Kai-Fa Huang, Pei-Luen Lu, Guang-Huey Lin, Aye Aye Khine, **Anren Hu**, and Hao-Ping Chen* (2016, Nov). Borneol Dehydrogenase from *Pseudomonas* sp. Strain TCU-HL1 Catalyzes the Oxidation of (+)-Borneol and Its Isomers to Camphor, *Applied and Environmental Microbiology*, 82, 6378-6385 (SCI, IF=4.016, 37/156, BIOTECHNOLOGY & APPLIED MICROBIOLOGY) MOST 104-2113-M-320-002
 21. Chun-Chieh Tseng*, Yun-Hsuan Tsai, **Anren Hu**, Je-Wen Liou, Kai-Chih Chang, Hsin-Hou Chang (2016, Oct). Altered susceptibility to the bactericidal effect of photocatalytic oxidation by TiO₂ is related to colistin resistance development in *Acinetobacter baumannii*. *Applied Microbiology and Biotechnology*, 100, 8549-8561 (SCI, IF=3.530, 46/156, BIOTECHNOLOGY & APPLIED MICROBIOLOGY) MOST 104-2113-M-320-002.
 22. Ji-Yuan Liang, Jun-Yun Wu, Ming-Yeh Yang, **Anren Hu**, Liang-Yu Chen* (2016, Oct). Photo-catalytic Polymerization of Catechin Molecules in Alkaline Aqueous. *Journal of Photochemistry and Photobiology B: Biology*, 165, 115-120 (SCI, IF= 4.383, 13/71, BIOPHYSICS) MOST 104-2113-M-320-002.
 23. Chien-Yu Lin, Chia-Jung Hsieh, Shyh-Chyi Lo, Pau-Chung Chen, Pao-Ling Torng, **Anren Hu**, Fung-Chang Sung, Ta-Chen Sue* (2016, Apr). Positive association between concentration of phthalate metabolites in urine and microparticles in adolescents and young adults. *Environment International*, 92- 93, 157-164. (SCI, IF=7.577, 18/265, ENVIRONMENTAL SCIENCES) MOST 103-2113-M-320-001.
 24. P. Muralidhar Reddy, K. Shanker, V. Srinivas, E. Ravi Krishna, R. Rohini, G. Srikanth, **Anren Hu*** and V. Ravinder* (2015, Jan). Hydrolysis of Letrozole catalyzed by macrocyclic rhodium (I) Schiff-base complexes, *Spectrochimica Acta Part A-Molecular And Biomolecular Spectroscopy*, 139, 43-48. (SCI, IF=3.232, 7/42, SPECTROSCOPY) MOST 103-2113-M-320-001. 本人為通訊作者.
 25. Madhusudhan Alle, Bhagavanth Reddy Gangapuram, Venkatesham Maragoni, Veerabhadram Guttena, Ming-Yeh Yang, **Anren Hu***, Surya S Singh* (2014, Feb). Efficient pH dependent drug delivery to target cancer cells by gold nanoparticles capped with carboxymethyl chitosan, *International Journal of Molecular Sciences*, 15, 8216-8234. (SCI, IF=4.556, 74/297, BIOCHEMISTRY & MOLECULAR BIOLOGY) NSC 100-2113-M-130-001-MY2. 本人為通訊作者.

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專書

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