主任履歷 Director Resume

姓　　名	吳忠信 主任
現　　職	國立臺灣師範大學生命科學專業學院優聘教授
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Name	Director Wu, Chung-Hsin
Current Position	Professor, College of Life Science, National Taiwan Normal University
Education	Ph.D. in Biological Sciences, University of Missouri, USA
Administrative Experience	Former Vice President for General Affairs, National Taiwan Normal University Former Director, Preparatory School for Overseas Chinese Students, National Taiwan Normal University
International Engagement	Member, Task Force on Systemic Pesticides (TFSP)
Social Service	Chairman, Taiwan Lan-Hai Cultural and Educational Development Association (2025 ~) Board Member, Taiwan BiAn Research Institute (2020 ~ 2026) Chairman, Taiwan Association of Traditional Veterinary Medicine (2020 ~ 2025) Chairman, Taiwan Society for Water Resources and Environmental Education (2010 ~ 2024) Chairman, Taiwan Bat Association (2009 ~ 2014) Director & Supervisor, Jane Goodall Institute Taiwan (2010 ~ 2025)

個人介紹 Personal Profile



吳忠信教授是一位知名的蝙蝠研究學者，創立「動感蝠神」實驗室，專注於蝙蝠回聲定位與腦內導航系統。他透過超聲波偵測、MRI 掃描與行為分析，揭示蝙蝠如何在黑暗中辨識自身回波、避免群體干擾，並指出青年蝙蝠需透過練習提升捕食成功率；同時比較不同蝙蝠的定位策略，研究夜蛾的反偵測行為，呈現掠食者與獵物的聲學攻防。他更將蝙蝠腦內「GPS」研究延伸至阿茲海默症的路徑記憶探討，開啟生態與醫學的跨界連結，並積極推動國際研討會與保育教育，讓蝙蝠翻轉為森林守護者，提升臺灣研究的國際能見度。

Professor Chung-Hsin Wu is a renowned bat researcher and founder of the “Dynamic Bat Lab,” dedicated to studying echolocation and the brain’s navigation system in bats. Through ultrasonic detection, MRI scans, and behavioral analysis, he revealed how bats distinguish their own echoes in darkness to avoid interference when flying in groups, and emphasized that young bats must practice extensively to improve hunting success. He compared different echolocation strategies among bat species and investigated moths’ anti-detection behaviors, highlighting the acoustic arms race between predator and prey. Professor Wu further extended his research on bats’ internal “GPS” cells to studies of memory loss in Alzheimer’s disease, bridging ecology and medicine. In addition, he actively promotes international conferences and conservation education, reshaping bats’ image from “vampires” to guardians of the forest, and enhancing Taiwan’s visibility in global scientific research.



吳忠信教授長期研究系統性殺蟲劑對臺灣生態的影響，他發現益達胺等藥劑在環境中殘留時間長，會累積在昆蟲體內並透過食物鏈危害蝙蝠，導致其腦內導航系統受損、覓食困難與族群衰退。這些成果凸顯殺蟲劑對非目標物種的慢性毒害，也與蜜蜂群崩解等全球危機相呼應。吳教授舉辦國際研討會，呼籲建立跨領域風險評估，並提出有機農業、生態農法、輪作與精準農業等替代方案，推動臺灣在國際舞台展現研究貢獻，同時促成政府制定「農藥用量減半」政策，為生態保育與永續農業奠定基礎。

Professor Chung-Hsin Wu has conducted long-term research on the ecological impact of systemic pesticides in Taiwan. He discovered that chemicals such as imidacloprid persist in the environment for extended periods, accumulate in insects, and then harm higher predators like bats by damaging their brain navigation systems, leading to feeding difficulties and population decline. His findings highlight the chronic toxicity of these pesticides on non-target species and connect directly to global crises such as bee colony collapse. To address these issues, Professor Wu organized international conferences advocating for cross-disciplinary risk assessments and promoted alternatives including organic farming, ecological agriculture, crop rotation, and precision farming. These efforts not only showcased Taiwan’s scientific contributions on the global stage but also helped drive government policy to reduce pesticide use by half, laying a foundation for biodiversity conservation and sustainable agriculture.



吳忠信教授透過跨國合作研究，利用次世代定序技術分析臺灣蝙蝠糞便樣本，發現其中含有腦心肌炎病毒、腸道病毒 F 株等多種可能引發人畜共通疾病的病毒，揭示蝙蝠是重要的潛在宿主。他指出蝙蝠雖能憑特殊免疫機制與病毒共存，但病毒一旦跨宿主感染，可能造成豬、牛、羊等經濟動物的繁殖障礙或高死亡率，甚至與人類新興冠狀病毒肺炎有相似病理表現。這些成果提醒社會需加強監測與防範，同時維護蝙蝠在害蟲控制與授粉上的生態角色，避免因恐懼而破壞族群，反而加劇病媒與農業損害。

Professor Chung-Hsin Wu, through international collaborative research, applied next-generation sequencing to analyze bat fecal samples in Taiwan and identified multiple viruses such as encephalomyocarditis virus and enterovirus F, which could potentially cause zoonotic diseases. His findings revealed bats as important reservoir hosts: while bats coexist with viruses due to unique immune mechanisms, cross-species transmission may lead to reproductive disorders or high mortality in livestock such as pigs, cattle, and sheep, and even show pathological similarities to human coronavirus pneumonia. These results underscore the need for enhanced monitoring and prevention, while also reminding society to preserve bats' ecological roles in pest control and pollination. Professor Wu emphasizes that fear-driven destruction of bat populations would worsen disease vectors and agricultural damage, highlighting the balance between public health vigilance and biodiversity conservation.



吳忠信教授研究發現科學中藥能有效保護動物呼吸道與腸胃道免受細菌與病毒感染，並以離乳仔豬的田野實驗證明，科學中藥不僅能減少肺炎與下痢的發生，還能提升免疫力、抗發炎、緩解氧化壓力，效果甚至優於抗生素。由於仔豬肺炎的症狀與新冠肺炎相似，吳教授提出科學中藥作為預防新冠肺炎的另類思維，認為其中富含的多元抗病毒活性成分能阻止病毒進入宿主細胞、抑制病毒複製並調節免疫反應，且不易產生抗藥性。他強調科學中藥可作為抗病毒藥物的輔助，減少副作用並提升療效，展現出在防治新興傳染病上的潛力與價值。

Professor Chung-Hsin Wu's research has demonstrated that scientific Chinese medicine can effectively protect animals' respiratory and gastrointestinal tracts from bacterial and viral infections. Through field experiments with weaned piglets, he showed that these herbal formulations not only reduce the incidence of pneumonia and diarrhea but also enhance immunity, provide anti-inflammatory effects, and alleviate oxidative stress-results that even surpassed those of antibiotics. Since piglet pneumonia shares similarities with COVID-19 symptoms, Professor Wu proposed scientific Chinese medicine as an alternative preventive approach, noting that its diverse antiviral compounds can block viral entry into host cells, inhibit replication, and modulate immune responses, while being less prone to resistance. He emphasized that scientific Chinese medicine can serve as an adjunct to antiviral drugs, reducing side effects and improving efficacy, thereby revealing significant potential and value in combating emerging infectious diseases.



吳忠信教授在科學中藥研究上有重要貢獻，他針對抗生素濫用造成抗藥性問題，提出以科學中藥作為替代方案，減少抗生素依賴並維護人類與動物健康。他的團隊從傳統中草藥中篩選出多種有效配方，證實能緩解神經退化疾病、心臟功能障礙、失眠打鼾與男性陽痿等文明病，並展現抗氧化、抗發炎、活血補氣及保護細胞的功效。這些成果不僅已刊登於國際期刊並獲得專利，也顯示科學中藥在提升免疫力、降低疾病風險、取代抗生素方面具有高度潛力，為臺灣乃至全球提供了兼顧醫療與環境永續的創新思維。

Professor Chung-Hsin Wu has made significant contributions to the study of scientific Chinese medicine. In response to the growing problem of antibiotic overuse and resistance, he proposed scientific Chinese medicine as an alternative to reduce dependence on antibiotics and safeguard both human and animal health. His team screened traditional herbal formulas and demonstrated their effectiveness in alleviating modern diseases such as neurodegenerative disorders, cardiac dysfunction, sleep apnea, and male impotence, showing benefits including antioxidant, anti-inflammatory, blood circulation–enhancing, and cell-protective effects. These achievements, published in international journals and recognized with patents, highlight the strong potential of scientific Chinese medicine to boost immunity, lower disease risks, and replace antibiotics. Professor Wu's work offers Taiwan-and the world-an innovative approach that integrates healthcare with environmental sustainability.



吳忠信教授看見臺灣寵物高齡化與抗生素濫用的嚴重問題，致力以科學中藥研發寵物健康食品，推動「動物長照 2.0」。他選用科學中藥製成保健飼料添加劑，證實能延緩寵物老化、保護器官功能、提升免疫力，並有效替代抗生素，減少「超級微生物」風險。為了推廣這一理念，他更邀集專家成立「臺灣中獸醫藥學會」，推動傳統中獸醫藥在動物保健與疾病治療上的應用，結合食補與針灸照護高齡寵物，讓毛小孩能在晚年活得更健康、更有尊嚴，同時減輕飼主龐大的醫療負擔。

Professor Chung-Hsin Wu has recognized the serious challenges of pet aging and antibiotic overuse in Taiwan, dedicating his efforts to developing scientific Chinese medicine–based pet health foods and promoting “Animal Long-Term Care 2.0.” By formulating feed additives from scientific Chinese medicine, he demonstrated their ability to slow aging, protect organ function, boost immunity, and effectively replace antibiotics, thereby reducing the risk of “superbugs.” To advance this vision, he brought together experts to establish the Taiwan Association of Traditional Veterinary Medicine, promoting the application of traditional veterinary medicine in animal health and disease treatment. Combining dietary therapy and acupuncture, his work provides holistic care for elderly pets, enabling them to live healthier and more dignified lives while easing the heavy medical burden on pet owners.



吳忠信教授目前積極投入科普傳播與推動在地偏鄉教育。他主持製作紀錄片《發現國境之南 - 臺灣生物的南島緣》，以影像探索臺灣與蘭嶼生物多樣性的起源，並呼應鹿野忠雄早期的南島研究，讓大眾理解黑潮如何塑造臺灣的生態與文化。透過這部紀錄片，希望提升社會對生態永續與原民文化的重視，並引導年輕世代理解科學與部落智慧的連結。他成立「台灣蘭海文教發展協會」，期許以教育提升、環境保育與地方創生為核心，培育偏鄉與離島孩子的科學素養與美育能力，推動生態復育與文化永續。

Professor Chung-Hsin Wu is actively engaged in science communication and advancing education in rural communities. He directed the production of the documentary Discovering the Southern Frontier – The Austronesian Origins of Taiwan's Biodiversity, which explores the ecological and cultural connections between Taiwan and Lanyu, echoing the pioneering research of Chujiro Kono. Through vivid imagery, the film illustrates how the Kuroshio Current has shaped Taiwan's biodiversity and indigenous traditions, aiming to raise public awareness of ecological sustainability and indigenous heritage, while guiding younger generations to see the link between science and traditional wisdom. Building on this vision, Professor Wu founded the Taiwan Lan-Hai Cultural and Educational Development Association, with the mission of promoting education, environmental conservation, and local revitalization. The association seeks to cultivate scientific literacy and aesthetic creativity among children in rural and island communities, fostering ecological restoration and cultural sustainability for future generations.