國 科 會 生 命 科 學 研 究 推 動 中 心

研討(習)會 結案報告

一、基本資料

中文名稱	跨世代創新農業生技國際研討會暨 ISBAB 臺灣年會 2025
英文名稱	Generations in Synergy: International Conference on Innovation in Agricultural Biotechnology and ISBAB Taiwan Annual Symposium
中文摘要報告	「跨世代創新農業生技國際研討會暨 ISBAB 臺灣年會」（Generations in Synergy: International Conference on Innovation in Agricultural Biotechnology and ISBAB Taiwan Annual Symposium）已於 2025 年 10 月 1 日至 2 日假國立中興大學生命科學院國際演講廳順利舉行，由國立中興大學生物科技發展中心與社團法人國際生物催化暨農業生物技術學會（ISBAB）臺灣分會共同主辦。本次研討會以「Generations in Synergy（跨世代共創）」為主題，象徵結合不同世代研究者的智慧與熱情，促進跨領域合作與永續創新。會中邀請來自美國、日本、以色列、韓國及臺灣等地的學者專家進行九場主題演講（Keynote Speeches）及多場邀請演講（Invited Talks），內容涵蓋植物訊號傳導、奈米膠囊傳輸技術、生物催化與代謝體學、人工智慧於生物醫學應用，以及病毒與細胞老化等研究主題。與會者共同探討農業生技如何從基礎研究邁向實際應用，以呼應聯合國永續發展目標（SDGs）。此外，大會亦設有口頭報告與壁報論文競賽，鼓勵青年學者與研究生展示成果、交流想法，增進國際連結。研討會兩日參與人數逾 200 人次，不僅促進全球農業生技領域之學術對話，也深化了國立中興大學與美國加州大學戴維斯分校（UC Davis）之間的研究與教育合作，開啟跨文化、跨領域的長期夥伴關係。本活動獲得國家科學及技術委員會（NSTC）、教育部高等教育深耕計畫及多家生技產業夥伴（如正瀚、利得、全瑩、圖爾思、金萬林等公司）之經費與資源支持。整體活動圓滿成功，展現臺灣在亞太地區農業創新領域的關鍵角色，強化國際科研網絡，並以「跨世代共創」的精神，推動永續農業與人類福祉之未來願景。
英文摘要報告	The Generations in Synergy International Conference on Innovation in Agricultural Biotechnology and ISBAB Taiwan Annual Symposium was successfully held on October 1–2, 2025, at National Chung Hsing University (NCHU). Jointly organized by the Biotechnology Center, NCHU, and the International Society of Biocatalysis and Agricultural Biotechnology (ISBAB) Taiwan Chapter, the event gathered leading scholars, early-career scientists, and industry professionals from Taiwan, the United States, Japan, Israel, and Korea. The conference theme, “Generations in Synergy,” emphasized both intergenerational collaboration and interdisciplinary integration. The program featured nine keynote lectures and multiple invited talks, covering frontier topics such as plant immune signaling, nanocapsid-based drug delivery, biofunctional

	metabolites, AI-driven biosystem analysis, and aging biology. Through these presentations, participants explored how agricultural biotechnology can bridge basic research and practical applications in alignment with the UN Sustainable Development Goals (SDGs). In addition to academic sessions, the event hosted oral and poster competitions, providing young scientists with platforms to present their research and exchange ideas with international experts. Over 200 participants attended the two-day symposium, fostering new collaborations and strengthening academic and educational ties between NCHU and the University of California, Davis (UC Davis). This partnership further deepens joint research and student exchange initiatives in agricultural and life sciences. The conference was made possible through the generous support of NSTC, MOE's Higher Education SPROUT Project, and several industrial sponsors (including CH Biotech, Leader Biotech, Trade Wind Biotech, and others). The event succeeded in enhancing Taiwan's visibility as a hub for agricultural innovation in the Asia-Pacific region, advancing global dialogue on sustainable biotechnology, and inspiring future scientific breakthroughs.
研討(習)會目的	本研討會旨在回應全球糧食安全與環境永續等重大挑戰，透過「Generations in Synergy（跨世代共創）」主題，促進跨世代與跨領域的學術交流與合作。活動聚焦於農業生物技術的最新發展與應用，涵蓋基因工程、奈米科技、生物催化、代謝體學、人工智慧及精準健康等新興領域。研討會除強化臺灣在國際農業生技研究之能見度外，亦藉由與美國加州大學戴維斯分校（UC Davis）等國際夥伴的合作，深化學術與教育交流，促進年輕學者與產業專家之經驗分享與合作，建立永續發展的科研網絡與人才培育體系。
參加對象(含人數)	本研討會為國際性大型學術會議，參加對象涵蓋國內外學者專家、研究人員、博士生及碩士生等，合計參與人數約 200 人次。 其中包含來自美國、日本、以色列、韓國及臺灣等國的講者與學員。大會設有九場主題演講（Keynote Speeches）、多場邀請演講（Invited Talks），以及口頭與壁報論文競賽（Oral & Poster Presentation Competition），提供青年學者展示研究成果與與會者交流互動之平台。
預期效益達成狀況	本研討會各項預期效益均已順利達成，具體成果如下： 一、國際合作強化： 成功促進國立中興大學與 UC Davis 等國際頂尖學府之研究與教育合作，延伸至學生交流與共同研究計畫。 二、學術能量提升： 透過多國專家之專題演講與討論，強化農業生技、奈米技術與人工智慧等跨領域整合之研究能量。 三、青年人才培育： 口頭與壁報競賽提供青年學者展示成果與獲得專家指導之平台，激發創新思維與研究動能。 四、國際能見度提升： 展現臺灣在亞太地區農業生技創新之領導角色，擴大國際學術與產業網絡。 綜合而言，本研討會成效良好，成功達成促進跨世代、跨領域及跨國科研交流之目標，對我國農業生技之永續發展具長遠正面影響。

二、邀請主講人姓名及學經歷

姓名	學歷	經歷	現任
Blake Meyers	Ph.D. in Genetics (UC Davis)	• Since March, 2024 Distinguished Professor, UC Davis • 2016-2024 Investigator, Danforth Plant Science Center	Director, Genome Center & Distinguished Prof., Dept. of Plant Sciences, University of California - Davis (UC Davis)
Kuo-Chen Yeh （葉國楨）	PhD, University of California, Davis	Distinguished Research Fellow, Academia Sinica	Distinguished Research Fellow and Director Agricultural Biotechnology Research Center, Academia Sinica, Taiwan
Ying-Lan Chen （陳盈嵐）	Ph.D., Institute of Plant Biology, National Taiwan University	• Since Aug, 2024 Assoc. Prof., Dept. of Biotechnology & Bioindustry Sciences, NCKU • Since Sep, 2021 Executive Supervisor, Taiwan Metabolomics Society (TMS)	Assoc. Prof., Dept. of Biotechnology and Bioindustry Sciences, National Cheng Kung University (NCKU)
R. Holland Cheng	Ph.D. in Structural Biology	• Professor, University of California, USA • Visiting Professor, Turku University, Finland • Assoc Processor, Karolinska Institute, Sweden	Professor, Dept. of Molecular & Cellular Biology & Director, PIOMS Institutional Program (Proteome Imaging of Macromolecular Systems) University of California - Davis (UC Davis)
Chun-Hua Hsu （徐駿森）	Ph.D., National Taiwan University	• Professor, National Taiwan University • Deputy Director, Center for Computational and Systems Biology, NTU	National Taiwan University Professor, Dept. of Agricultural Chemistry & Institute of Biochemical Sciences

Ching-Ching Yu （游景晴）	Ph.D., Department of Chemistry, National Tsing Hua University	• 2022–Present Assoc. Prof., Dept. of Chemistry, NTHU • 2021–Present Joint Appt. Assoc. Res. Fellow, IBC, AS	Associate Professor, Department of Chemistry National Tsing Hua University
Oren Ostersetzer-Biran	Ph.D. in Molecular Biology & Genetics	• Full Professor - Institute of Life Sciences, The Hebrew University of Jerusalem. • Head, Graduate Biotechnology Program. • Director, Hebrew University Center for Sustainability.	Prof., Inst. of Life Sciences & Graduate Biotechnology Program The Hebrew University of Jerusalem
Ming-Jung Liu （劉明容）	Associate Research Fellow, Biotechnology Center Southern Taiwan, Academia Sinica (AS-BCST), Tainan, Taiwan.	• 2016-present Assistant Research Fellow. • 2013-2016 PDF, Department of Plant Biology, MSU, USA. • 2012-2013 PDF, Institute of Plant and Microbial Biology, AS, Taiwan.	Ph.D. Molecular and Biological Agricultural Sciences, TIGP, AS/NCHU, Taiwan.

Su-Chiung Fang （方素瓊）	Ph.D. Dept. of Botany, University of Wisconsin-Madison	• Research Fellow, Academia Sinica • Adjunct Professor, National Chung Hsing University, Taiwan • Adjunct Professor, National Cheng Kung University, Taiwan	Research Fellow, Agricultural Biotechnology Research Center & Biotechnology Center in Southern Taiwan Academia Sinica

Yutaka Kuroda	• Doctor of Science (Department of Physics, Tokyo University) • Diploma (undergraduates) of Physics (in theoretical solid state physics, ETH Zurich)	2004-present Associate professor and Professor at TUAT	Tokyo University of Agriculture and Technology (TUAT) Dept. of Biotechnology and Life Science, Faculty of Engineering/ Institute of Global Innovation Research/ Professor
Maria L. Marco	BS and PhD in Microbiology	2008-present University of California, Davis, USA	Prof., Dept. of Food Science & Technology, University of California - Davis (UC Davis)
Hyung-Wook Kwon	Ph.D. in Neuroscience & Entomology, University of Arizona, Tucson, Arizona, USA	• Jan 2017-present Director, Convergence Research Center for Insect Vectors, Incheon National University, Korea • Mar 2016-present Professor (Tenured), Department of Life Sciences, Incheon National University, Korea	Prof., Dept. of Life Sciences, Incheon National University
Patrick Chiu-Yat Woo （胡釗逸）	Ph.D. in Doctor of Medicine , University of Hong Kong, HK	• 2018 to present | Fellow, European Confederation of Medical • 2013 to present | Fellow Mycology: Austria, AT Royal College of Physicians (Glasg): London, GB	Chair Professor of Microbiology and Infectious Disease, National Chung-Hsing Univsity (NCHU)
Yen-Wei Chu （朱彥煒）	Ph.D. in Computer Science, National Chiao Tung University, Taiwan	• Director, Graduate Institute of Genomics and Bioinformatics, NCHU • AI Consultant,	Distinguished Professor & Director/Graduate Institute of Genomics and Bioinformatics, NCHU

		Taiwan Gloria Center • Guest Lecture, Institut Teknologi Bandung (ITB), Indonesia • Visiting Scholar, KIIT University, India	
Yu-Chan Chao （趙裕展）	Ph. D. Department of Entomology, University of Arkansas	• Chairperson, BacuNova Biotech Co. Ltd. • Adjunct Professor, Department of Entomology, National Taiwan University. • Adjunct Research Fellow, Institute of Molecular Biology, Acacemia Sinica.	Visiting Chair Professor, Department of Entomology and Department of Life Sciences, National Chung-Hsing University
Wei-Li Hsu （徐維莉）	PhD from the University of Glasgow, UK	• 2013-present Professor at National Chung Hsing University • 2021-present Director of Graduate Institute of Microbiology and Public Health	Distinguished Professor, Graduate Institute of Microbiology and Public Health, National Chung Hsing University
Ying-Ming Liou （劉英明）	PhD in Physiology, University of Pittsburgh	• Department of Life Sciences, National Chung Hsing University, Taichung 402, Taiwan • The iEGG and Animal Biotechnology Research Center, National Chung Hsing University, Taichung 402, Taiwan	Professor/Department of Life Sciences, NCHU

三、議程

日期	議程時間	議程講員	議題主題
10/1	**09:20-10:10**	**Blake Meyers**	**Phased, secondary siRNAs in plant reproduction**
	10:30-11:20	**Kuo-Chen Yeh** （葉國楨）	**Uncoupling Aerenchyma and Iron Plaque Formation in Rice**

	11:20-11:50	**Ying-Lan Chen（陳盈嵐）**	**A Long-distance Signaling Peptide across Flowering Plants Regulate Plant Growth and Immunity**
	13:30-14:20	**R. Holland Cheng**	**Mucosal Nanocapsid with Quaternary Modularity for Targeted Delivery**
	14:20-14:50	**Chun-Hua Hsu（徐駿森）**	**From Pigment Biosynthesis to Neurochemical Sensing: Functional Rewiring of Plant Dioxygenases**
	14:50-15:20	**Ching-Ching Yu（游景晴）**	**Analytical and Biocatalytic Advances Toward Bioactive Fucosylated HMOs**
	15:40-16:30	**Oren Ostersetzer-Biran**	**The evolution of angiosperms organellar gene regulation: Impacts on Eukaryogenesis and land (plant) adaptation**
	16:30-17:00	**Ming-Jung Liu（劉明容）**	**Design and Generation of Plant Auto-Bioluminescent Pi-deficiency Sensors (BioLumiPi) via promoter design and CRISPR-Editing**
	17:00-17:30	**Su-Chiung Fang（方素瓊）**	**Molecular insights into the distinct developmental pathways of the micropropagation processes in *Phalaenopsis* orchids**
10/2	**09:00-09:50**	**Yutaka Kuroda**	**Protein Immuno-Engineered vaccine seeds**
	10:10-11:00	**Maria L. Marco**	**Dietary microbes as friends, not foe**
	11:00-11:50	**Hyung-Wook Kwon**	**Development and Evaluation of Pollen Substitute Diets for Honey Bees and Assessment of Health-Related Molecular Markers**
	13:00-13:50	**Patrick Chiu-Yat Woo（胡釗逸）**	**East meets West: Infection, Acupuncture, and Artificial Intelligence**
	13:50-14:20	**Yen-Wei Chu（朱彥煒）**	**The Applications of AI Generative Multispectral Imaging as the Fingerprint for Crop Physiological States**
	14:40-15:30	**Yu-Chan Chao（趙裕展）**	**Baculoviruses as Next-Generation Vaccines: Innovation through Insect Biotechnology**
	15:30-16:00	**Wei-Li Hsu（徐維莉）**	**Functional Diversity of NS1 Variants in Avian Influenza Virus**
	16:00-16:30	**Ying-Ming Liou（劉英明）**	**How Cellular Stress Accelerates Stem Cell Aging: Exploring the CHOP–AKR1A1–p53 Pathway**

四、活動照片和影片

- 照片(至少 10 張，請填寫照片說明)

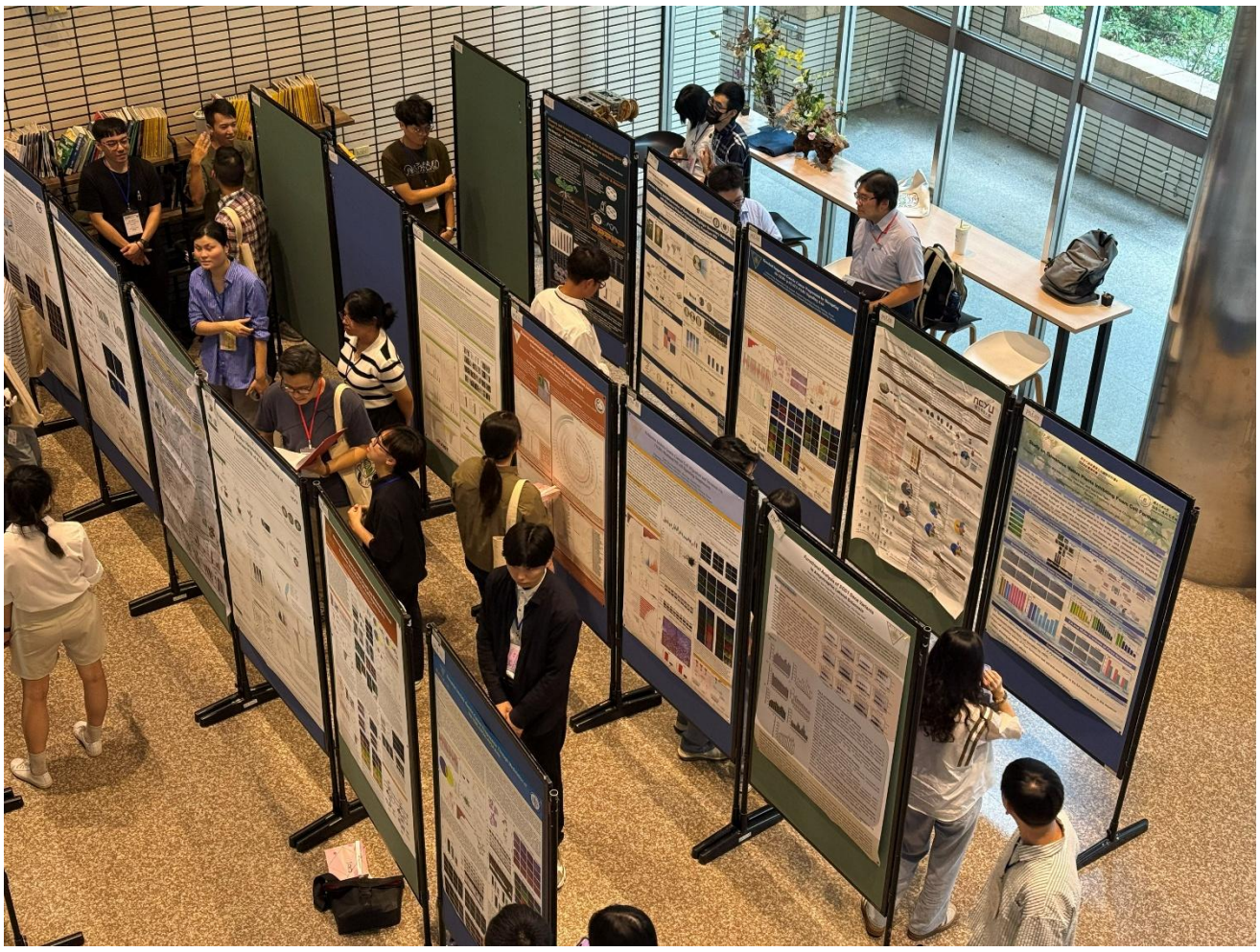
由中興大學詹富智校長擔任致詞歡迎國內外的講者與參與者齊聚中興大學參與跨世代創新農業生技國際研討會暨 ISBAB 臺灣年會 2025

特邀請美國加州大學戴維斯分校（University of California, Davis）基因體中心主任暨植物科學系特聘教授 Blake C. Meyers 教授蒞校訪問並進行專題演講。Meyers 教授

為植物小分子 RNA 與基因體調控研究領域之世界級權威，現任美國國家科學院院士（Member of the U.S. National Academy of Sciences, 2022），並於 2020–2024 年擔任《The Plant Cell》期刊總編輯，對植物分子遺傳學、RNA 機制及基因表現調控之研究貢獻深遠。本次邀請旨在促進我校研究團隊與 UC Davis 之實質合作，建立植物基因體與生殖生物學研究的國際鏈結，並提供師生直接與國際頂尖學者互動交流的機會，以拓展研究視野與技術應用能力。專題演講：「Phased, secondary siRNAs in plant reproduction」此場演講聚焦於植物生殖發育過程中之「phased, secondary small interfering RNAs (phasiRNAs)」的生合成與功能。Meyers 教授首先說明 miRNAs 及 siRNAs 在植物基因沉默中的典型機制，接著深入探討由 22 nt miRNA 觸發的 phasiRNA 途徑，如何於小麥、玉米與水稻中形成不同階段特化的 21 nt 與 24 nt 小分子 RNA。他以團隊近年發表於 Proceedings of the National Academy of Sciences (PNAS, 2025) 的研究為例，揭示 DICER-LIKE 5 (DCL5) 基因缺失導致之溫度敏感性雄性不育現象，並指出 AU-rich motif 在 24 nt phasiRNA 生合成中的導向角色。此發現對理解植物雄性不育機制及應用於氣候適應性育種具有突破性意義。

由生科中心侯明宏主任擔任會議主持人，介紹以色列學者 Oren Ostersetzer-Biran


Aging shows a positive correlation with the CHOP/AKR1A1 axis.
p53
p21
p16
CHOP
AKR1A1
Age
BMSCs mRNA analyze from Human Male donor



學生口說競賽共計 20 位同學參與，並邀請學內學者擔任評審，由陳全木富校長頒發口說獎金與獎狀授予得獎同學，本次會議除專題演講外，亦舉辦 口說競賽與壁報競賽，共有 21 位碩、博士生進行口說發表，另有 83 位碩博士生參與壁報展示（其中碩士生 58 位、博士生 22 位）。競賽不僅提供青年研究者展示成果的舞台，更促進與國際學者的直接交流，拓展學術視野並孕育未來合作契機。

除演講學者外，也邀請國內知名學者吳永昌教授與徐麗芬教授擔任會議引言人

於演講後開放台下問答，透過討論時間促進與會者之意見交流與經驗分享，深化主題內容之理解與學術互動。

現場與會者餘 200 人

中興大學生物科技發展中心與社團法人國際生物催化與農業生物技術學會（ISBAB）臺灣分會共同主辦的 「跨世代創新農業生技國際研討會暨 ISBAB 臺灣年會」研討會與會人員合影留念

會場有廠商參與，介紹實驗儀器與實驗服務

- 影片(1-2 分鐘精華短片，請上傳至結案報告專區，並提供檔案名稱