

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	2025 年基因體學、演化與生物多樣性國際研討會
英文名稱	2025 International Symposium on Genomics, Evolution and Biodiversity
中文摘要報告	<p>本次研討會合計有 101 位產、官、學等與會者進行討論交流。本次兩場大會演講開啟聽眾對於 AI 應用和植物基因體學研究的討論。19 場次主題演講涵蓋動物植物和海洋生物等相關研究，經由國內外物種基因體專家分享研究經驗，並參與年輕學者與研究生口頭報告和壁報論文討論、座談與交換研究心得。本次透過座談會開啟國內基因體研究團隊的相互理解與意見交流。初步提出幾種值得基因體解碼的魚類、林木和農作物。未來尚需要與相關單位進一步的意見交流和提出相關計畫和尋求經費支持。</p>
英文摘要報告	<p>A total of 101 participants from industry, government, and academia attended the seminar for discussion and exchange. Two keynote speeches initiated discussions on AI applications and plant genomics research. The symposium featured 19 presentations covering research related to animals, plants, and marine life, with domestic and foreign genome experts sharing their experiences through oral presentations, poster sessions, and research exchanges among young scholars and graduate students. This symposium facilitated mutual understanding and exchange of ideas among domestic genomic research teams. Several fish species, trees, and crops were identified as candidates worthy of genome decoding. Moving forward, we plan to engage with relevant stakeholders, propose specific plans, and seek financial support for these initiatives.</p>

<p>研討(習)會目的</p>	<p>自從 2012 年國內社群開啟基因體相關研討會，近年多體學技術已經成為許多學術研究的主要方法。本次研討會希望能夠促進臺灣物種多樣性基因體及特有生物的保種、育種等研究社群能夠跨領域對話討論。藉此協助推動臺灣物種基因體研究的相關專案，促進合作與資源共享並促進經濟發展，以鞏固臺灣在國際生物研究領域的競爭力。期能結合各領域的資源與技術，應用在品系育種和基因體數位保存等重點工作。 本次研討會將首次邀請專家和學者共同商議魚類、樹種和農作物等「值得基因體解碼的臺灣物種」。大會演講更特別邀請曾獲梵蒂岡科學院院士殊榮的五條堀孝(Takashi Gojobori)講述「綠色創新與人工智慧及基因體學」；國際知名植物學者李飛葦(Fay-Wei Li)分享「Evolutionary genomics of non-seed plants」作為兩日會議的開場演講。以及國內外專家分別講述植物基因體學與應用、生態與演化基因體學、多體學技術與應用、動物基因體學與演化等專題演講與分析前沿研究趨勢。第二日的訓練工作坊亦邀請組裝各種生物基因體經驗豐富的蔡怡陞講授如何使用組裝軟體完成發表基因體。</p>
<p>參加對象(含人數)</p>	<p>合計 101 位 (含講員 19 位、外國學生 12 位、日本學者 3 位, 美國者 1 位、政府科研單位 11 位); 專家會議計有下列單位參與討論:</p> <p>#學界: 中研院(ABRC、BRC、ICOB、IMB、IPMB)、台灣大學(昆蟲系、農藝系、植物科學研究所、基因體與系統生物學學位學程、漁業科學所、生態演化所、生命科學系、生態學與演化生物學研究所)、中興大學(土壤環境科學系、昆蟲系、農藝學系)、台北醫學大學(醫學院、IGPM), 台大醫院(醫學研究部)、中山大學(生物科學系、學士後醫學系)、台北科技大學(生化與生醫工程研究所)、成功大學(生命科學、生物醫學工程學系)、政治大學(資訊科學系)、清華大學(分子與細胞生物研究所)、臺灣海洋大學(水產養殖學系)、佛光大學</p> <p>#政府單位: 海洋委員會、農業部(農業試驗所, 水產試驗所, 畜產試驗所, 臺中區農業改良場, 種苗改良繁殖場, 茶及飲料作物改良場, 台南區農業改良場, 桃園區農業改良場, 獸醫研究所, 生物多樣性研究所)、國家實驗研究院台灣海洋科技研究中心</p> <p>#業界: Antec Bioscience、基龍米克斯、伯森生物科技</p>

	#國外: SOKENDAI (Research Center for Integrative Evolutionary Science) 、 University of Florida (College of Veterinary Medicine)
預期效益達成狀況	<p>1. 建構跨領域討論平台:促進國內外專家的對話和交流，對於臺灣物種基因體的未來推動建立基礎。</p> <p>2. 本次兩場大會演講開啟聽眾對於 AI 應用和植物基因體學研究的討論。19 場次主題演講涵蓋動物植物和海洋生物等相關研究，經由國內外物種基因體專家分享研究經驗，並參與年輕學者與研究生口頭報告和壁報論文討論、座談與交換研究心得。</p> <p>3.本次透過座談會開啟國內基因體研究團隊的相互理解與意見交流，海委會和農業部等相關單位的意見；初步提出幾種值得基因體解碼的魚類、林木和農作物。未來尚需要與相關單位進一步的意見交流和提出相關計畫和尋求經費支持。</p>

## 二、邀請主講人姓名及學經歷

姓名	學歷	經歷	現任
Takashi Gojobori	Ph.D. in Theoretical Population Genetics, Kyushu University	(a) 2007 年獲頒梵蒂岡宗座科學院院士; (b) Distinguished Professor, KAUST (King Abdullah University of Science and Technology); (c) Director-in- General, Marine Open Innovation Institute (MaOI Institute), Shizuoka, Japan; (d) Distinguished Guest Research Professor, Waseda University, Tokyo, Japan; (e) Emeritus Professor, National Institute of Genetics, Mishima, Japan; (f) Emeritus Professor, School of Science, The Graduate University for Advanced Sciences, Hayama Japan; (g) 2012-2017: Project Professor, The University of Tokyo	成功大學生命科學系玉山學者
Fay-Wei Li	Ph.D., Department of Biology, Duke University	(a) 2023 – Associate Professor, Boyce Thompson Institute; (b) 2023 – Adjunct Associate Professor, Plant Biology Section, Cornell University; (c) 2017 – Assistant Professor, Boyce Thompson Institute; (d) 2017 – Adjunct Assistant Professor, Plant Biology Section	Associate Professor, Boyce Thompson Institute, Cornell University

Nina Yasuda	PhD, Graduate School of Information Science and Technology, Tokyo Institute of Technology	(a) 2022 Apr -present Professor, Graduate School of Agricultural and Life Sciences, The University of Tokyo; (b) 2019 Apr -2022 Mar Associate Professor, Department of Marine Biology and Environmental Science, Faculty of Miyazaki, University of Miyazaki; (c) 2014- Apr 2019 Mar: Associate Professor, Organization for Promotion of Tenure Track at University of Miyazaki; (d) 2011 May - 2014 Mar: Assistant Professor, Department of Marine Biology and Environmental Sciences; Faculty of Agriculture, University of	Professor, Graduate School of Agricultural and Life Sciences, The University of Tokyo
呂美擘	PhD: Dept. of Plant Biology, Univ. Illinois, Urbana-Champaign	(a) 2008-present: Manager, NGS High Throughput Genomics Core Facility, Academia Sinica; (b) 2011-2015: Assistant Research Specialist, Biodiversity Research Center, Academia Sinica; (c) 2015-2021: Associate Research Specialist, Biodiversity Research Center, Academia Sinica; (d) 2021-present: Senior Research Specialist, Biodiversity Research Center, Academia Sinica	Research Specialist Sr., Biodiversity Research Center (BRC), Academia Sinica
沈聖峰	Cornell University Animal Behavior Ph.D., Aug.2003-Jan.2009	(a) Aug.2010-Jan. 2015 Assistant Research Fellow, Biodiversity Research Center, Academia Sinica; (b) Jan.2016- Jan 2021 Associate Research Fellow, Biodiversity Research Center, Academia Sinica; (c) Aug. 2017- Oct. 2019 Coordinator, Biodiversity Program/International Graduate Program, Academia Sinica, Taiwan; (d) Mar. 2018- Oct. 2019 Deputy Director, Biodiversity Research Center,	Research Fellow, Biodiversity Research Center, Academia Sinica
蔡怡陞	Ph.D., Bioinformatics and Population Genomics, Imperial College London, UK	(a) Research Fellow, 2022-Present, Biodiversity Research Center Academia Sinica; (b) Associate Research Fellow with tenure, 2019-2022, Biodiversity Research Center Academia Sinica; (c) Assistant Research Fellow, 2015-2018, Biodiversity Research Center Academia Sinica	Research Fellow, Biodiversity Research Center, Academia Sinica.
蘇怡璇	Ph.D. in Marine Biology, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, USA	(a) 2022-present. Research fellow, Institute of Cellular and Organismic Biology, Academia Sinica, Taipei, Taiwan; (b) 2016-2022. Associate research fellow, Institute of Cellular and Organismic Biology, Academia Sinica, Taipei, Taiwan; (c) 2007-2016. Assistant research fellow, Institute of Cellular and Organismic Biology, Academia Sinica, Taipei, Taiwan	Research fellow, Institute of Cellular and Organismic Biology, Academia Sinica, Taipei, Taiwan

王升陽	國立台灣大學 森林系研究所 博士	(a) 國立中興大學循環經濟研究學院院長 (2022-08 ~); (b) 行政院科技政策諮詢專家室生衛醫農群組共同召集人 (2022-05 ~); (c) 國立中興大學森林學系特聘教授 (2011-08 ~)	國立中興大學森林學系特聘教授
陳宗嶽	Ph. D., Institute of Genetics, National Yang-Ming University	(a) Discipline Coordinator, Division of Agricultural Resources, National Science and Technology Council, Taiwan; (b) Distinguished Professor, Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University, Taiwan; (c) Director, University Center for Bioscience and Biotechnology, National Cheng Kung University, Taiwan; (d) Director, Agriculture Biotechnology Research Center, National Cheng Kung University, Taiwan	Distinguished Professor and Director, Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University
曾彥學	國立台灣大學森林學研究所博士(2004)	(a) 農業部 林業試驗所 所長 (2023.08-現任); (b) 行政院農業委員會林業試驗所 所長 (2021.02-2023.07); (c) 國立中興大學實驗林管理處 處長(2014.08-2021.01); (d) 國立中興大學森林學系教授、副教授、助理教授(2005.02- 迄今); (e) 行政院農業委員會 特有生物研究保育中心 副研究員、助理研究員(1992.07- 2005.01); (f)內政部 營建署玉山國家公園管理處 技佐 (1991.10-1992.06);	農業部林業試驗所所長
曲芳華	Ph.D., Department of Plant Pathology, National Chung-Hsing University, Taiwan	(a) Professor, 2012 – present, School of Forestry and Resource Conservation, National Taiwan University, Taiwan; (b) Department Chair 2019-2022, School of Forestry and Resource Conservation, National Taiwan University, Taiwan	Professor, School of Forestry and Resource Conservation, National Taiwan University, Taiwan
李承勸	Ph.D., Department of Biology, Duke University	(a) 2024–current Professor, National Taiwan University; (b) 2020–2024 Associate Professor, National Taiwan University; (c) 2016–2020 Assistant Professor, National Taiwan University	Professor, Institute of Ecology and Evolutionary Biology, Institute of Plant Biology National Taiwan University
林明德	PhD, Institute of Molecular and Cellular biology, National Taiwan University	(a) 2024/02 ~ Present Professor, Department of Molecular Biology and Human Genetics, Tzu Chi University; (b) 2016/8 ~ 2024/01 Associate Professor, Department of Molecular Biology and Human Genetics, Tzu Chi University; (c) 2010/02 ~	Professor, Department of Molecular Biology and Human Genetics, Tzu Chi

		2016/07 Assistant Professor, Department of Molecular Biology and Human Genetics, Tzu Chi University; (d) 2007/02 ~ 2010/01 Assistant Professor, Department of Life Sciences, Tzu Chi University	University
陳盈嵐	Ph.D., Institute of Plant Biology, National Taiwan University	(a) 2024.08~now Associate Professor, Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University (NCKU); (b) 2021.09~now Executive Supervisor, Taiwan Metabolomics Society (TMS); (c) 2020.08~2024.07 Assistant Professor, Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University (NCKU); (d) 2016.02~2020.02 Adjunct Assistant Professor, Department of Bioscience and Biotechnology, National Taiwan Ocean University	Associate Professor, Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University (NCKU)
林哲揚	Ph.D., Genetics, Purdue University	(a) 2019–present Assistant Research Fellow, Biotechnology Center in Southern Taiwan (BCST), Agricultural Biotechnology Research Center (ABRC), Academia Sinica, Taiwan; (b) 2019–present Adjunct Assistant Professor, National Cheng Kung University, Taiwan; (c) 2014–2019 Assistant Project Scientist, University of California, Los Angeles (UCLA)	Assistant Research Fellow, Biotechnology Center in Southern Taiwan (BCST), Agricultural Biotechnology Research Center (ABRC), Academia Sinica, Taiwan
呂曉沛	National Taiwan University Institute of Zoology (Ph.D.)	(a) 2019.02~present, Assistant Professor , Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University; (b) 2012.08~2019.01, Postdoctoral Fellow , Institute of Oceanography, National Taiwan University	Assistant Professor, Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University

三、議程

**2025ISGEB Conference Agenda**

**Venue: Auditorium, 1st Floor, Interdisciplinary Research Building**

**Day 1: 2025/3/12 (Wednesday)**

Time	Speaker	Title
08:40-	Registration	
09:10-09:30	<b>Opening Remarks</b>	<b>Wen-Hsiung Li / Benny Kwok Kan Chan</b>
<b>Keynote 1 (Chair: Wen-Hsiung Li)</b>		
09:30-10:20	Takashi Gojobori	K1: Green Innovation with AI and Genomics -New-Generation Bioreactor Development -
10:20-10:40	<b>Tea Break (Group Photo)</b>	
<b>Session 1: Young Faculty Talks (Chair: Lie-Fen Shyur)</b>		
10:40-11:05	Chia-Yi Cheng	L01: Predictive Genotype-Phenotype Relations Using Genetic Diversity in Solanaceae Plants
11:05-11:30	Hsiao-Pei Lu	L02: Marine Plankton Diversity Revealed by Universal DNA Barcoding
11:30-11:55	Jer-Young Lin	L03: Genome-wide Dynamics of Histone Modifications During Soybean Seed Development
11:55-13:00	<b>Lunch</b>	C101 room
12:30-14:00	<b>Poster Session</b>	PC1-PC6, PN1-PN4
<b>Session 2: Plant Genomes and Applications (Chair: Jei-Fu Shaw)</b>		
14:00-14:25	Fang-Hua Chu	L04: Genetic Diversity of Taiwan Endemic Tree Species for Specialized Products
14:25-14:50	Yao-Cheng Lin	L05: Transposable Elements Drive Evolution and Perturb Gene Expression in <i>Brassica</i>
14:50-15:15	Cheng-Ruei Lee	L06: The Domestication and Expansion of Adzuki: Evidence from Population Genomics
15:15-15:35	<b>Tea Break</b>	
<b>Session 3: Ecological and Evolutionary Genomics (Chair: Chang-Hung Chou)</b>		
15:35-16:00	Nina Yasuda	L07: Ecological Genomics: Revealing the Hidden Diversity and Ecology of Marine Life Through Field Research, Molecular Ecology and Beyond
16:00-16:25	Isheng Jason Tsai	L08: Disentangling the Evolutionary History of Yeasts near its Geographical Origin
<b>Session 4: Omics Technology (Chair: Chang-Hung Chou)</b>		
16:25-16:50	Mei-Yeh Lu	L09: Advanced Genomics Technologies and Applications
16:50-17:15	Ming-Der Lin	L10: The Genomic Landscape of <i>Forcipomyia taiwana</i> : A Distinct Olfactory Repertoire in Ceratopogonid Biting Midges
17:50-	Dinner	<i>Invited only</i>

## 2025ISGEB Conference Agenda

Venue: Auditorium, 1st Floor, Interdisciplinary Research Building

Day 2: 2025/3/13 (Thursday)

Time	Speaker	Title
08:30-	Registration	
<b>Keynote 2 (Chair: Fuh-Jyh Jan)</b>		
09:00-09:50	Fay-Wei Li	K2: Evolutionary Genomics of Non-seed Plants
09:50-10:00	<b>Tea Break</b>	
<b>Session 5: Animal Genomes and Evolution (Chair: Jen-Leih Wu)</b>		
10:00-10:25	Yi-Hsien Su	L11: Comparative Genomics and the Evolution of Deuterostomes
10:25-10:50	Sheng-Feng Shen	L12: Genomic Insights into the Distinct Evolutionary History and Conservation of Formosan Landlocked Salmon
10:50-11:15	Chang-Wen Huang	L13: Genomic Innovations in <i>Tilapia</i> : Enhancing Aquaculture Through Precision Breeding
<b>Session 6: Student and Postdoc Competition (Chair: Pei-Wen Hsiao)</b>		
11:15-11:30	Puyam Tondonba Singh	OP1: Reduced Expression of Calcium Pumps Augments Banana Resistance to Fusarium Wilt Tropical Race 4
11:30-11:45	Jui-Hung Tai	OP2: Massive Chromosome Fission and Speciation in Asian Stream Chub: Integrating Kinetochore Reproduction Theory with Transposable Element Dynamics
11:45-12:00	Benjamin Boumard	OP3: Genomics informs the regulation of complex life cycles in the medusozoan <i>Aurelia</i>
12:00-12:15	Hien Quang Kha	OP4: CRISPRON: An Optimized Convolutional Neural Network Framework for Accurate Prediction of CRISPR/Cas9 Repair Outcomes in Primary Human T Cells
12:15-12:30	Ky Phat Nguyen	OP5: Transcriptomics-Metabolomics Interaction Network Analysis for Diabetes-Complicated Tuberculosis Biomarker Discovery and Validation
12:30-13:50	<b>Lunch</b>	<b>C101 room: Insight into Plant and Animal Genomics: Highly Accurate Long-Read Sequencing with State-of-the-Art Library Prep technology</b>

## 2025ISGEB Conference Agenda

Venue: Auditorium, 1st Floor, Interdisciplinary Research Building

Day 2: 2025/3/13 (Thursday)

Session 7: Brainstorming Session (in Chinese): “值得基因體解碼的臺灣物種” (Moderator: David Sheng-Yang Wang)		
13:50-13:55	王升陽	Introduction
13:55-14:10	Panelist A: 曾彥學	BS1: 值得基因體解碼的臺灣樹種
14:10-14:25	Discussion A	
14:25-14:40	Panelist B: 陳宗嶽	BS2: 值得基因體解碼的臺灣魚類
14:40-14:55	Discussion B	
14:55-15:10 <b>Tea Break</b>		
15:10-15:25	Panelist C: 陳盈嵐	BS3: 值得基因體解碼的臺灣農作物
15:25-15:40	Discussion C	
15:40-16:00	General discussion	
16:00-16:20	<b>Closing Remarks</b>	<b>Awards and Closing Ceremony</b>
Session 8: Hands-on workshop		
15:10-17:10	Isheng Jason Tsai	L14: Hands-on Workshop on Computational Skills for Omics
Poster Session: 3/12 12:30-14:00		
Chong-Wei Lee	PC1: Genetic Structure and Phylogenetic Analysis of 183 Sweet Potato ( <i>Ipomoea batatas</i> ) Germplasm from TARI Chiayi Branch	
Hsuan-Wei Kao	PC2: Improved Phenotype Prediction in Eggplant: Neural Network-Based Morphology Classification and Beyond	
Guan-Rou Huang	PC3: Genomic Analysis of Environmental Bacterial Strains Resistant to Itaconic Acid from Sizihwan Bay	
Yu-Ren Wang	PC4: Comparative Genomics and Population Genetics of African Sacred Ibis in Taiwan	
Thi-My-Trang Luong	PC5: Machine Learning-Driven Biomarker Discovery for Endometrial Cancer Subtyping: Integrating Proteomics with Explainable AI	
Xuan-Lam Bui	PC6: Predicting Tumor Mutational Burden in Endometrial Cancer Using Proteomics and Machine Learning: A Step Toward Precision Oncology	
Hung-Wei Chen	PN1: Genome Assemblies and Population Genomics of two <i>Castanopsis</i> Species (Family: Fagaceae)	
Chia-Hsuan Sung	PN2: Studies on the Genetic Diversity of Farmed Taiwanese Hard Clams ( <i>Meretrix taiwanica</i> ) in Taiwan	
Kiran Kumar Eripogu	PN3: The Evolution, Pathogenicity, and Biosynthetic Potential of Genus <i>Nocardia</i>	
Yu-Hsuan Huang	PN4: Speciation and Host Usage of Fire Coral-Associated Barnacle <i>Wanella milleporae</i> (Thoracicalcare: Wanellinae) in Indo-Pacific Oceans	

#### 四、活動照片和影片

- 照片(至少 10 張，請填寫照片說明)



2025/3/12 開幕團體照。第一排由右至左為 Nina Yasuda (日本學者)、Takashi Gojobori (玉山學者)、李文雄(中研院院士)、陳國勤(中研院生物多樣性研究中心主任)、周昌弘(中研院院士)、徐麗芬(中研院農業生物科技研究中心特聘研究員)。



2025/3/12 Takashi Gojobori 專題演講。



2025/3/12 Session 1: Young Faculty Talks (Chair: Lie-Fen Shyr)



2025/3/12 Poster session



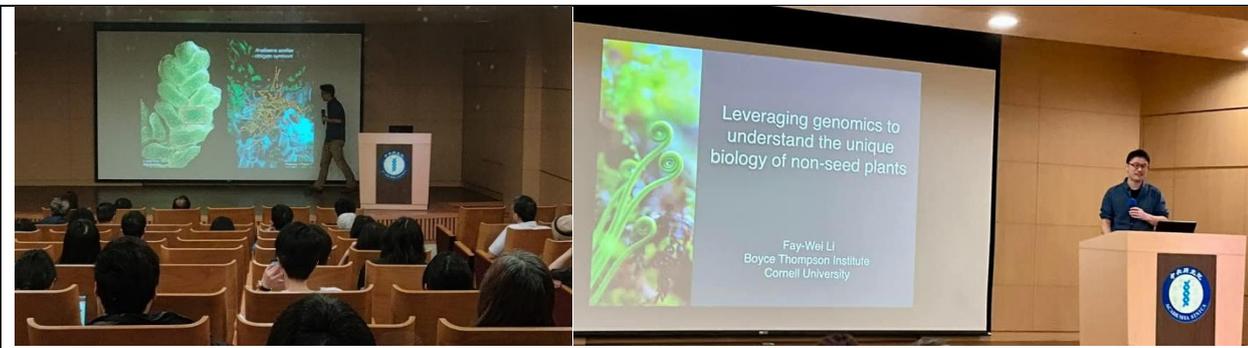
2025/3/12 Session 2: Plant Genomes and Applications (Chair: Jei-Fu Shaw)



2025/3/12 Session 3: Ecological and Evolutionary Genomics (Chair: Chang-Hung Chou)



2025/3/12 Session 4: Omics Technology (Chair: Chang-Hung Chou)



2025/3/13 Fay-Wei Li 專題演講。



2025/3/13 Session 5: Animal genomes and evolution (Chair: Jen-Leih Wu)



2025/3/13 Session 6: Student and postdoc competition (Chair: Pei-Wen Hsiao)



2025/3/13 Session 7: Brainstorming session: 值得基因體解碼的臺灣物種-專家會議團體照。第一排由右至左為 Fay-Wei Li (美國學者)、李文雄(中研院院士)、陳宗嶽(國立成功大學生物科技與產業科學系特聘教師)、曾彥學(農業部林業試驗所所長)、王升陽(國立中興大學森林學系終身特聘教授兼創新產業暨國際學院院長)。



2025/3/13 Session 7: Brainstorming session: 值得基因體解碼的臺灣物種-專家會議綜合討論。左上圖:由右至左為曾彥學(農業部林業試驗所所長)、王升陽(國立中興大學森林學系終身特聘教授兼創新產業暨國際學院院長)、陳宗嶽(國立成功大學生物科技與產業科學系特聘教授)、陳盈嵐(國立成功大學生物科技與產業科學系副教授)。



2025/3/13 Session 8: Hands-on workshop



2025/3/13 閉幕頒獎

影片已上傳, 亦可於 2025ISGEB 活動網頁上瀏覽:  
<https://www.tbgs.org.tw/posts/20250205-2025-international-symposium-on-genomics-evolution-and-biodiversity>