

IPMB NEWSLETTER

Institute of Plant and Microbial Biology, Academia Sinica

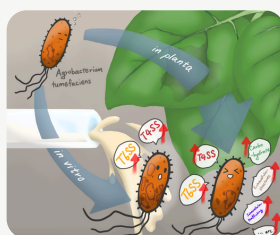


A Note from the Director 所長的話

Welcome to the first issue of the IPMB Newsletter, a new seasonal publication created to bring our community closer together. Each issue will highlight the people, research, and everyday moments that shape life at IPMB. Our institute thrives because of the dedication, creativity, and collaboration of IPMB fellows across laboratories and offices. Through this newsletter, we hope to stay connected, celebrate achievements, welcome new colleagues, and reflect on our shared journey. I sincerely thank everyone who contributed to this inaugural issue and all members of IPMB for your continued passion and commitment. May this newsletter bring warmth, inspiration, and a strong start to the year ahead together.

Research Highlights 本期研究亮點

1 [Chih-Horng Kuo/Erh-Min Lai/Chih-Hang Wu] Comparative transcriptomics reveals context- and strain-specific regulatory programs of *Agrobacterium* during plant colonization



This study examines five wild-type *Agrobacterium* strains and identifies ID1108 as highly effective in tumorigenesis and transient transformation. Transcriptomic analyses under virulence induction and in planta revealed extensive strain-specific gene regulation, with few conserved DEGs across strains. The findings highlight major

divergence from model strain C58 and show how host and environmental cues shape bacterial transcriptional responses, underscoring the need to study strains in biologically relevant contexts.

Microbial Genomics **11(8)**:001485 (2025). DOI: 10.1099/mgen.0.001485.

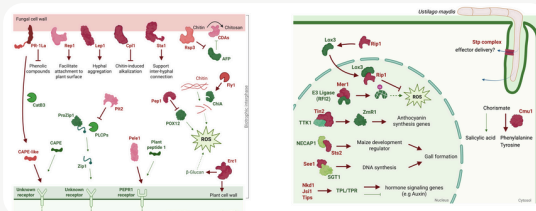
2 [Ting-Ying Wu] TISCalling: leveraging machine learning to identify translational initiation sites in plants and viruses



TISCalling is a machine-learning framework that overcomes limitations of conventional TIS identification, especially for non-AUG sites in plants. It highlights conserved and species-specific sequence features, predicts viral TISs with high accuracy, and provides scores to prioritize putative TISs for discovering novel proteins. The tool is available as both a command-line package and a web interface for user-friendly visualization.

Plant Molecular Biology **115(4)**:102 (2025). DOI: 10.1007/s11103-025-01632-3.

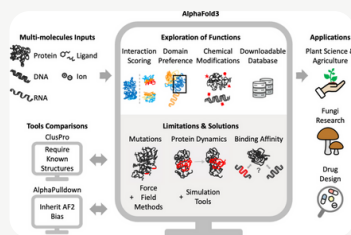
3 [Lay-Sun Ma] Molecular Puppeteering: Roles of *Ustilago maydis* Effectors



This review highlights how *Ustilago maydis* effectors manipulate host responses and induce tumor formation, while revealing evolutionary differences between core and accessory effectors shaped by host adaptation. It also outlines current challenges in studying low-conservation or intrinsically disordered effectors and emphasizes the need for species-specific functional tools. Integrating structural and functional approaches will be key to advancing our understanding of smut fungi pathogenicity and improving crop resistance.

Current Opinion in Plant Biology **88**, 102792 (2025). DOI: 10.1016/j.pbi.2025.102792.

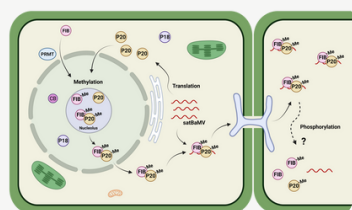
4 [Pao-Yang Chen] Analysing protein complexes in plant science: insights and limitation with AlphaFold 3



This review highlights AlphaFold 3 as a major advancement in predicting plant protein interactions and complex structures. AF3 offers improved scalability and flexibility, aiding studies of stress responses and immunity, though challenges remain for large complexes, protein dynamics, and mutation effects. The article also compares AF3 with existing tools and outlines how molecular dynamics and experiments can further extend its impact.

Botanical Studies **66**(1):14 (2025). DOI: 10.1186/s40529-025-00462-2.

5 [Na-Sheng Lin] Fibrillarin Methylates a Movement Protein to Facilitate Satellite RNA Trafficking in Plants



Fibrillarin (FIB), a conserved nucleolar methyltransferase, is essential for the systemic movement of bamboo mosaic virus satellite RNA (satBaMV). This study shows that FIB methylates the arginine-rich motif of the satBaMV-encoded P20 movement protein and that its methyltransferase (MTase) activity is required for satBaMV long-distance transport. Loss of P20 methylation or mutations that impair FIB MTase activity disrupt nucleolar localization, plasmodesmata targeting, and P20-assisted satBaMV trafficking, highlighting the critical role of FIB-dependent P20 methylation in satBaMV systemic movement.

The Plant Cell **37**(10), koaf224 (2025). DOI: 10.1093/plcell/koaf224.

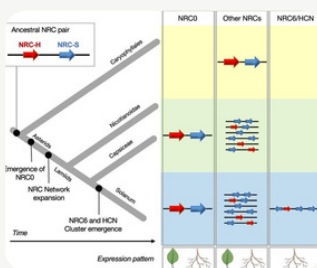
6 [Chih-Horng Kuo] Defensive symbiosis: Stinkbugs use fungi to shield their eggs from parasitic wasps



Dinidoriid stinkbugs were reported to possess a conspicuous tympanal organ on female hindlegs. This study shows that the structure is specialized to retain microbial symbionts. Its porous cuticle connects each pore to glandular cells, allowing fungal hyphae to grow and cover the organ. During oviposition, females transfer these fungi to their eggs, forming a protective layer against parasitic wasps. The fungi are mostly low-pathogenicity Cordycipitaceae.

Science **390**, 279–283 (2025). DOI: 10.1126/science.adp6699.

7 [Chih-Hang Wu] The Defense of Tomato Roots: A Specialized NLR Gene Cluster Against Nematodes



A tomato root-specific NLR gene cluster, including Hero, MeR1, and the helper NRC6, evolved about 21 million years ago from the ancestral NRC network. These NLRs function exclusively through NRC6 to trigger immune cell death against cyst and root-knot nematodes. The findings show that this cluster has sub-functionalized for root immunity, illustrating organ-specific NLR evolution to combat specific pathogens and limit autoimmunity.

The Plant Cell **37**(7), koaf145 (2025). DOI: 10.1093/plcell/koaf145.

IPMB Calendar 重要行事曆

DECEMBER
2025/12/19

Tea Party

JANUARY
2026/01/16

Deadline for Travel Grant
Competition Application
2026/01/28

Travel Grant Competition

FEBRUARY
2026/02/04

Get to Know IPMB Activity

MARCH
2026/03/25

Shu-Chen Grace Chen Memorial
Lectures

APRIL
2026/04/24-27

EMBO Workshop (Evolving
together: from genomics to
biological interactions)

MAY
2026/05/18-19

2026 Quantitative Microbiology
Symposium

New Members 新血報到

1 Dr. Makoto Shirakawa 白川一



Hello, my name is Makoto Shirakawa. I joined Academia Sinica this September. Before coming here, I conducted research in Japan and Canada.

My work focuses on plant developmental biology, using genetics and imaging-based analyses to investigate how transcription factors regulate plant cell differentiation. Ultimately, I aim to uncover how specialized cell types arise across diverse plant lineages and how these mechanisms have evolved.

Although immersing myself in research is one of my hobbies, I also enjoy running and taking walks while observing cityscapes.

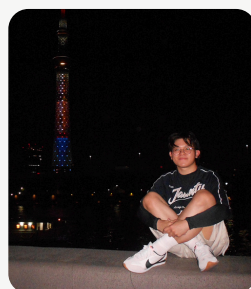
2 Dr. Yu-Ying Phoebe Hsieh 謝侑穎



Phoebe grew up in Hsinchu, Taiwan, where tradition and technology inspired her independent curiosity. Her passion for biology emerged during undergraduate research with Gwo-Jen Liaw, and deepened at Academia Sinica in Jun-Yi Leu's lab,

studying genetic buffering and evolution. For her Ph.D. with Andrew Murray at Harvard, Phoebe explored how a single protein evolves to work differently in mitosis and meiosis. In postdoctoral work with Harmit Malik and Ajai Dandekar, she revealed that microbial competition for magnesium (Mg^{2+}) profoundly affects antibiotic resistance evolution, offering new strategies to address drug resistance. In 2025, Phoebe returns to Academia Sinica to lead research on microbial "frienemies," aiming to uncover the ripple effects of microscopic relationships. Committed to mentoring, she fosters a collaborative environment for junior scientists. Outside the lab, she enjoys Taiwan's markets, cooking, and exploring nature with her family.

3 Leandro Ravael 陳策豪 (Chuan Ku Lab)



Hi! I'm Leandro Ravael, a fourth-year biotech student from Indonesia, here for a one-year internship. I love skateboarding and reading crime, thriller, and horror books. I also play badminton and swim every week to balance all the lab sitting.

I'm really excited to be here and to spend a great time with everyone in this positive, international community. P.S. I speak a bit of Mandarin, so if you talk to me in Mandarin, I might struggle... but I'm happy to learn!

4 Nguyen Si Thanh 阮士青 (Ooi-Kock Teh Lab)



My name is Nguyen Si Thanh, and you can also call me Thomas. I come from Vietnam and recently joined IPMB as a research assistant. My research background is in molecular biology and immunology, and I completed my Master's degree working on immune responses in fish at NTOU. I am especially interested in cellular signaling

pathways, and I hope to continue expanding my skills in plant biology and related molecular techniques. Outside the lab, I enjoy traveling, exploring new places, and staying active through various sports. I am excited to meet everyone and look forward to learning and growing together at IPMB.

5 Desyanti Saulina Sinaga 辛娜嘉 (Ka-Wai Ma Lab)



My name is Desyanti Saulina Sinaga, but please call me Desy. I am a postdoctoral researcher focusing on enhancing CRISPR/Cas9 genome-editing efficiency in crops to advance crop quality and support progress in molecular pharming. My dream is to develop agricultural

innovations that create meaningful, positive impacts for communities and help improve overall quality of life. Outside the lab, I enjoy spending time in nature and appreciating beautiful natural scenery. A fun fact about me is that when I'm quiet, people often think I'm upset—but that's just my natural face, and I still haven't figured out how to change it!

6 Myat Yamin 妍敏 (Paul Verslues Lab)



Hi everyone! I'm Yamin, from Myanmar and currently a research assistant. My work focuses on plant stress responses, and I'm excited to grow my skills in molecular biology

and explore drought-related signaling pathways. I completed my Master's degree at NTHU, where I studied cohesin-mediated loop extrusion in DNA repair. Outside the lab, I'm a big foodie who loves discovering new places to eat, and I unwind by playing guitar or hiking. I'm really looking forward to meeting more people in IPMB.

7 Yuta Horiuchi 堀内雄太 (Makoto Shirakawa Lab)

I'm Yuta Horiuchi, a postdoc who joined IPMB this September. My research interest is evolution and development of plants. My current work focuses on myrosin cell differentiation in *Arabidopsis thaliana*. I found this topic very interesting as it involves cell morphology, the regulation of cell proliferation



endoreplication, and cell fate determination. Off hours, I enjoy hiking and traveling, and recently I've been climbing mountains near Taipei on the weekends. My favorites so far are Qixing Mountain and Banpingshan. I hope to climb Yushan someday. Let me know if you also love a hike!

8 Wei-Jiun Ma 馬威鈞 (Chih-Horng Kuo Lab)



I am Wei-Jiun Ma 馬威鈞, a research assistant and a master's graduate from the Department of Entomology at National Chung Hsing University. My research interests mainly focus on bacterial genomics and evolution, as well as symbiotic relationships

between bacteria and their insect or plant hosts. Outside of research, I enjoy swimming, astronomy, playing video games, reading manga, and Pokémon. During my time here, I hope to get to know everyone better. I really enjoy talking with people and look forward to interacting with scholars from different research fields.

9 Wei-Bin Wu 吳維彬 (Jian-Geng Chiou Lab)



Hi everyone! I'm Wei-Bin Wu, a research assistant. My master's research focused on protein structure and small-molecule drug development, but now I'm working on introducing the yeast cell polarity system into plants through a synthetic biology approach. I'm interested in using this approach to explore how

intracellular systems function in their simplest forms and how we can build a cell using bottom-up strategies. Outside the lab, I enjoy traveling, watching movies and series, and listening to Western and Korean pop music. I'm excited to get to know you all and learn from your experiences!

10 Sara Spieler 史佩蘭 (Chuan Ku Lab)

Hi, my name is Sara Spieler, 史佩蘭. I recently graduated with a Master's degree in Bioinformatics and Computational Biology from Université Côte d'Azur in France. Before joining IPMB, I completed an internship at the University of Oslo, where I worked on personalized treatment for breast cancer patients.



I've always wanted to work with microalgae, especially for environmental applications such as biofuels. That's why I came to Taiwan, to learn more, gain experience, and eventually tackle larger projects in this field.

I love traveling and working at the same time, it's the most efficient way for me to learn about a country and its people. My hobbies change a lot, but at the moment I'm practicing archery.

11 Jou-Chi Lin 林柔齊 (Erh-Min Lai Lab)



Hello everyone, my name is Jou-Chi Lin, and I am a new Master's student from NCHU, IMPPMB. I recently joined IPMB, and my research focuses on characterizing key genes involved in the floral dip transformation process, and I'm excited to learn from the community and work with the nice people here.

Outside the lab, I enjoy relaxing with some gaming or watching series. I look forward to meeting and working with more of you!

Good News & Achievements 植微人的好消息

1 Awardees of the 2025 Poster Competition



Congratulations to all award recipients for their excellent presentations.

2 Ms. Mei-Ching Chen Promoted to Associate Research Specialist



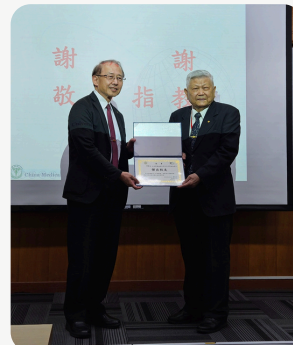
Warmest congratulations to Ms. Mei-Ching Chen on her promotion.

3 13th Young Scholar Innovation Award – Dr. Chih-Hang Wu



Dr. Chih-Hang Wu received the Young Scholar Innovation Award from FAOS, recognizing his outstanding research achievements.

4 Academician Chang-Hung Chou Named Distinguished Alumnus



Academician Chang-Hung Chou was honored as the Distinguished Alumnus of NTU's Institute of Plant Biology.

5 IPMB Awardees at the 2025 TSPB Meeting

2025年臺灣植物學年會得獎名單

2025 終身成就獎

□ 賀端華 院士

2025 最佳植物學碩士論文獎

□ 第三名 張翹之
(指導教授：馬麗珊博士、吳少傑博士)

2025 三分鐘論文短講

□ 第一名 吳宇
□ 第三名 Chynthia Devi Hartono
□ 佳作 田環綺

2025 壁報比賽

【博士後與博士生】

□ 特優 曾晉謙
□ 佳作 黃俊凱

2025 特選摘要論文

□ 莊耿卿 (指導教授：涂世隆)
□ 侯良諭 (指導教授：吳志航)
□ Miguelito Isip (指導教授：馬家威)
□ Juan Carlos Lopez-Agudelo (指導教授：吳志航)

【碩士生、大學生與研究助理】

□ 特優 Yi-Feng Chen
□ 優等 江秉真
□ 佳作 洪孟如
□ 佳作 林冠妤
□ 佳作 方薇涵

Several IPMB members were recognized at the 2025 TSPB Meeting—congratulations to all awardees for their excellent work.

Photos from the Event



YIA Spotlight 年輕學者委員會

Young Investigator Association

Stay connected with YIA

1. IPMB Email [YIA] Activity!
2. Contact Your YIA Lab Representative!
3. Access Website Below!

YIA Official Website: <https://ipmb.sinica.edu.tw/en/about/youngCommittee>

YIA Facebook Group: <https://www.facebook.com/groups/504629419562063>

Past Events 活動回顧

[Oct-Nov, 2025] Photography Competition



CAPTURE MOMENTS
YIA PHOTOGRAPHY COMPETITION
SHOW YOUR TALENT
Submit your best photo

Submission deadline 投稿截止:
Oct 31, 2025
Exhibition period 展覽期間:
Nov 3 - Nov 25, 2025
Voting period 投票期間:
Nov 3 - Nov 25, 2025

Submit here 投稿連結:
<https://forms.gle/GtBJH48xv18T9Gn7>

Categories 比賽類別:
A. Microscopy Photography 顯微攝影 (3 winners)
B. Biological Photography 生物攝影 (3 winners)
C. Bioinformatics Images 生物資訊影像 (1 winner)

Awards 獎金:
1st: NT\$1,500
2nd: NT\$1,000
3rd: NT\$500
Special: Bioinformatics category only 1 prize of NT\$1,000

Winners:

Microscopy –
Pragati (1st)
Das Prathama (2nd)
Chin-Chung Yen (3rd)

Biology –
Horiuchi Yuta (1st)
Huan-Chi Tien (2nd)
Keng-Min Lin (3rd)

Bioinformatics –
Lavakaw Tharimaraw

[Oct, 2025] Clearance Sale



YIA 絕版出清
ON SALE
Contact A326 Mu-Ts Pan or YIA core member

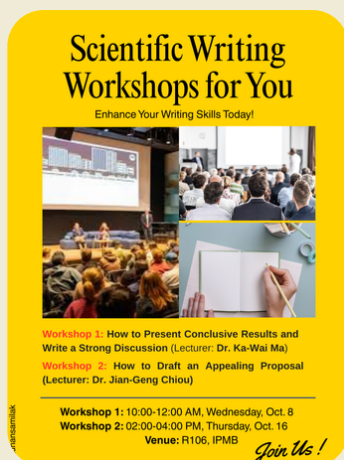
*144 帆布袋 Canvas bag NT. 200
紀念品 cup/hat NT. 100

*2 *6 青色棉T T-shirt (cotton) NT. 100
M*2 XL*4 2L*4 3L*8

排汗衫 T-shirt (quick dry fabric) NT. 100
XL*3

S*1 3XL*2 XL*4 S*2 XL*1
連帽外套 hooded jacket NT. 100

[Oct 8 & 16, 2025] Scientific Writing Workshop



Scientific Writing Workshops for You
Enhance Your Writing Skills Today!

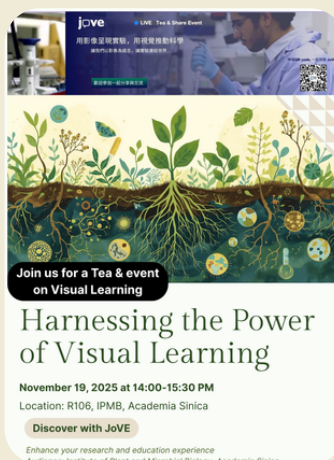
Workshop 1: How to Present Conclusive Results and Write a Strong Discussion (Lecturer: Dr. Ka-Wai Ma)
Workshop 2: How to Draft an Appealing Proposal (Lecturer: Dr. Jian-Geng Chiou)

Workshop 1: 10:00-12:00 AM, Wednesday, Oct. 8
Workshop 2: 02:00-04:00 PM, Thursday, Oct. 16
Venue: R106, IPMB

Join Us!

YIA hosted two workshops featuring **Dr. Jian-Geng Chiou** and **Dr. Ka-Wai Ma**, who shared practical insights to help students strengthen their proposal and manuscript writing.

[Nov 19, 2025] JoVE (Journal of Visualized Experiments) Sharing



Join us for a Tea & event on Visual Learning

Harnessing the Power of Visual Learning

November 19, 2025 at 14:00-15:30 PM
Location: R106, IPMB, Academia Sinica
Discover with JoVE

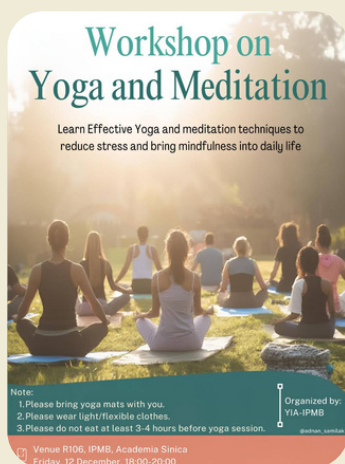
Enhance your research and education experience
Audience: Institute of Plant and Microbial Biology, Academia Sinica

Writing experimental protocols can be challenging, and missing details often affects reproducibility. To address this, the Life Science Library hosted a sharing session on JoVE—a video-based journal that presents high-quality experimental protocols for researchers.

Young Investigator Association

Upcoming Events 最新活動

[Dec, 2025] Yoga and Meditation Workshop



The workshop will focus on introducing Ashtanga Yoga. Both Yoga and meditation support achieving a subtle balance between physical and mental well-being.

[Feb 5, 2026] Alumni Sharing



Feeling anxious about your future career planning? YIA is inviting one of our alumni to share their experience on how to prepare yourself and map your path if you are going to the next step in your career.

[Mar 3-5, 2026] YIA Seminar (International) – Dr. Martin Kaltenpoth

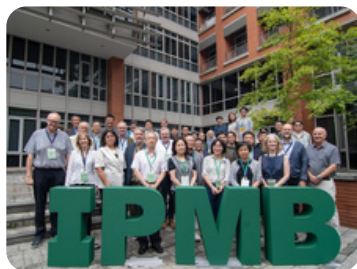


We are excited to welcome **Dr. Martin Kaltenpoth** from the Max Planck Institute for Chemical Ecology as our YIA seminar speaker. His research reveals the evolutionary mechanisms behind insect-microbe symbioses and plant-insect chemical interactions. Details about individual meetings will be shared soon.

Life at IPMB 所內活動側寫



This summer's staff trip to Hualien was filled with sunshine, good food, and great company!



Great conversations and new ideas filled the AAC gathering—thank you to everyone who participated.



The annual Shang-Fa Yang Memorial Lecture brought an afternoon of inspiring scientific exchange.



Our Open House was a big success! Huge thanks to all staff for bringing great energy and making this event truly fun.

Take a Break 放鬆一下

FIND THE DIFFERENCE: There are **8** differences between the two pictures. Can you spot them?



PICTURE A



PICTURE B

Q Answers will be revealed in the next issue. Stay tuned!

IPMB in the Spotlight 焦點錦集

1 Academia Sinica Press Conference: Academia Sinica Builds First Dual Carbon Fixation System in Plants, Published in *Science*.

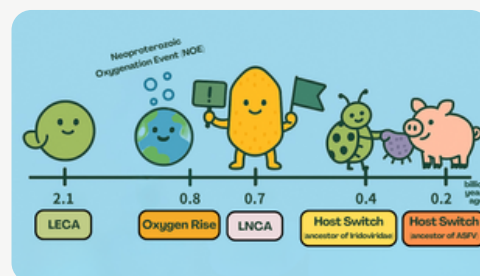
Read more:

https://www.sinica.edu.tw/en/news_content/55/3304



2 IPMB Popular Science Article: New Dating Method Reconstructs the Evolutionary History of Giant Viruses (featuring research by Dr. Chuan Ku)

Read more: <https://reurl.cc/NN67G5>



Resources to Share 實用資訊分享

General Laboratory Techniques



The Life Sciences Library has purchased access to selected JOVE collections, providing visualized demonstrations of various experimental techniques. Lab members are welcome to explore the resource through the link below.

<https://app.jove.com/access>

For any comments or suggestions about this newsletter, please contact Ms. Pei-Ling Wu (lilian541@gate.sinica.edu.tw).