

CURRICULUM VITAE

Chuan Ku (顧銓)



Citizenship: Taiwan
Institution: Institute of Plant and Microbial Biology (IPMB)
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Position: Assistant Research Fellow / Assistant Professor
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Researcher profiles: [ResearchGate](#) [ORCID](#) [Google Scholar](#) [Web of Science](#)

Professional Profile

Education

- 2013–2016 Dr. rer. nat. in Biology (*summa cum laude*), Heinrich Heine University Düsseldorf, Germany (dissertation title: “On the prokaryotic origins of eukaryotic genes”)
2009–2011 M.Sc. in Ecology and Evolutionary Biology, National Taiwan University, Taiwan (thesis title: “Identification of *Ardisia* (Myrsinaceae) leaf-nodule symbionts and cophylogenetic analyses of plant-bacteria symbiosis”)
2005–2009 B.Sc. in Life Science with a minor degree in Geosciences, National Taiwan University, Taiwan

Professional experience

- 2019– Assistant Research Fellow, Institute of Plant and Microbial Biology, Academia Sinica, Taiwan
2016–2018 Postdoctoral fellow, Department of Plant and Environmental Sciences, Weizmann Institute of Science, Israel
2016 Postdoctoral fellow, Institute of Molecular Evolution, Heinrich Heine University Düsseldorf, Germany
2012–2013 Research assistant, Institute of Plant and Microbial Biology, Academia Sinica, Taiwan
2011–2012 Personnel officer, Reserve Command, Ministry of National Defense, Taiwan
2010–2012 Part-time English-Mandarin translator, Linguitronics Co., Taiwan

Professional experience (joint appointment and adjunct positions)

- 2021– Jointly Appointed Assistant Professor, Department of Life Sciences, National Cheng Kung University, Tainan, Taiwan
- 2020– Adjunct Assistant Professor, Institute of Ecology and Evolutionary Biology, National Taiwan University, Taipei, Taiwan
- 2020– Jointly Appointed Assistant Professor, Genome and Systems Biology Degree Program, National Taiwan University and Academia Sinica, Taipei, Taiwan
- 2019– Adjunct Assistant Professor, Department of Life Science, National Taiwan Normal University, Taipei, Taiwan
- 2019– Adjunct Assistant Professor, Biotechnology Center, National Chung Hsing University, Taichung, Taiwan

Awards and scholarships

- 2023 Global Investigator of European Molecular Biology Organization (EMBO)
- 2022 Outstanding Young Scholar Award, Taiwan Society of Plant Biologists, Taiwan
- 2021 Young Scholars' Creativity Award, Foundation for the Advancement of Outstanding Scholarship, Taiwan (傑出人才發展基金會第九屆年輕學者創新獎)
- 2020 Academia Sinica Career Development Award with research funding for 2021–2025
- 2017 Best Dissertation Award, Faculty of Mathematics and Natural Sciences, Heinrich Heine University Düsseldorf, Germany
- 2016 EMBO Long-Term Fellowship for postdoctoral fellows for 2017–2018 (ALTF 1172-2016)
- 2016 Koshland Prize for postdoctoral fellows, Weizmann Institute of Science, Israel
- 2016 Dean of Faculty Fellowship, Weizmann Institute of Science, Israel
- 2016 Young Investigator Travel Award, Annual Meeting of the Society for Molecular Biology & Evolution (SMBE) 2016, Gold Coast, Australia
- 2016 Funded Visit Program for PhD students, Weizmann Institute of Science, Israel
- 2015 Travel Grant for Volkswagenstiftung “Kick-off Conference: Life? – A New Funding Initiative Introduces Itself,” Hanover, Germany
- 2013–2016 Research scholarship for foreign doctorate students and young academics, German Academic Exchange Service (DAAD), Germany
- 2011 Distinguished Master's Thesis Award, Taiwan Society of Plant Biologists, Taiwan
- 2011 Dean Award for outstanding performance in study, College of Life Science, National Taiwan University, Taiwan
- 2008 Undergraduate Research Scholarship, National Science Council, Taiwan
- 2007 Scholarship for further academic study and training in Germany, German Academic Exchange Service (DAAD), Germany
- 2005–2009 Presidential Awards for bachelor's students, National Taiwan University, Taiwan

Participation in workshops and courses

- 2022 EMBO online training course: Effective Oral Communication for Researchers in the Life Sciences (July 12, 2022), hosted by EMBO, Academia Sinica, and Ministry of Science and Technology, Taiwan
- 2018 EMBO Lab Leadership for Postdocs (September 3 – 5, 2018), Heidelberg, Germany
- 2017 EMBO Practical Course – Single Cell Omics (April 24 – April 30, 2017), Heidelberg, Germany (selected attendee; oral and poster presentation)
- 2016 Hjort Summer School 2016: Microbial Oceanography – Complexity vs. Simplicity in Microbial Ecology (August 29 – September 2, 2016), Bergen, Norway (selected attendee; oral and poster presentation)

Language proficiency

Mandarin (native), English (fluent), German (near-fluent)

English:

- 2012 TOEFL iBT: Total 115/120 (Reading 30/30, Listening 30/30, Speaking 28/30, Writing 27/30)
- 2011 Certificate in Mandarin-English Translation and Interpretation, National Taiwan University, Taiwan
- 2010 Certificate of Competency in Chinese and English Translation and Interpretation (examination in *English to Chinese Translation: General Topics*), Ministry of Education, Taiwan

German:

- 2012 TestDaF: Reading 5/5, Listening 4/5, Speaking 4/5, Writing: 4/5

Media coverage

- 12/2022 Announcement of new EMBO Global Investigators ([in English](#))
- 12/2022 2021 Research Highlights of Academia Sinica ([in English/Mandarin](#))
- 07/2022 Comments on 2022 monkeypox outbreak, Science Media Center ([in Mandarin](#))
- 10/2021 Liberty Times newspaper coverage on our giant virus research ([in Mandarin](#))
- 11/2020 Perspective on a *Nature* paper ([reported by Science](#))
- 10/2020 DAAD Info Session on PhD research ([in Mandarin](#))
- 09/2020 Interview by Radio Taiwan International ([in German](#))
- 07/2020 Short Alumnus Speech on the 20th Anniversary of DAAD Taiwan ([in German](#))
- 01/2019 Introduction to new PI, Academia Sinica ([in Mandarin](#))
- 02/2017 Best Dissertation Award, Heinrich Heine University Düsseldorf ([in German](#))
- 09/2015 Report by German Academic Exchange Service ([in German](#))

Research and Communication

Research interests

My research centers on the evolutionary, regulatory and ecological genomics of eukaryotic microbes, with emphasis on the following topics:

- Evolution and regulation of microalgal morphology, physiology and life cycles
- Gene origins and ancient evolution of eukaryotes and their giant viruses
- Microalga-microbe interactions and their impact on ecosystems

Publications (#Corresponding author)

30. Chia-Chun Tung, Shang-Che Kuo , Chia-Ling Yang, Jhong-He Yu, Chia-En Huang, Pin-Chien Liou, Ying-Hsuan Sun, Peng Shuai, Jung-Chen Su, **Chuan Ku**[#], Ying-Chung Jimmy Lin[#] (2023): Single-cell transcriptomics unveils xylem cell development and evolution. *Genome Biology* (accepted)
29. Gur Hevroni, Flora J. Vincent, **Chuan Ku**, Uri Sheyn, Assaf Vardi (2022): Daily turnover of active giant virus infection during algal blooms revealed by single-cell transcriptomics. *bioRxiv* DOI: 10.1101/2022.10.15.512338
28. Siwat Chang, Tzu-Haw Wang, Ming-Wei Lai, **Chuan Ku**[#] (2022): Complete genome sequence of *Phaeobacter* sp. strain G2 isolated from lab culture of the calcifying alga *Emiliana huxleyi*. *Microbiology Resource Announcements*. DOI: 10.1128/mra.01067-22
27. Tzu-Tong Kao, Tzu-Haw Wang, **Chuan Ku**[#] (2022): Rampant nuclear-mitochondrial-plastid phylogenomic discordance in globally distributed calcifying microalgae. *New Phytologist* 235(4): 1394–1408. DOI: 10.1111/nph.18219
26. Chia-Chun Tung, Shang-Che Kuo , Chia-Ling Yang, Chia-En Huang, Jhong-He Yu, Ying-Hsuan Sun, Peng Shuai, Jung-Chen Su, **Chuan Ku**[#], Ying-Chung Jimmy Lin[#] (2021): Single-cell transcriptomics unveils xylem cell development and evolution. *bioRxiv*. DOI: 10.1101/2021.10.16.464627
25. Tsu-Wang Sun, **Chuan Ku**[#] (2021): Unraveling gene content variation across eukaryotic giant viruses based on network analyses and host associations. *Virus Evolution* 7(2): veab081. DOI: 10.1093/ve/veab081
24. **Chuan Ku**[#] (2021): Giant virus-eukaryote interactions as ecological and evolutionary driving forces. *mSystems* 6(4): e00737-21. DOI: 10.1128/mSystems.00737-21
23. Tsu-Wang Sun, Chia-Ling Yang, Tzu-Tong Kao, Tzu-Haw Wang, Ming-Wei Lai, **Chuan Ku**[#] (2020): Host range and coding potential of eukaryotic giant viruses. *Viruses* 12(11): 1337. DOI: 10.3390/v12111337
22. **Chuan Ku**, Uri Sheyn, Arnau Sebé-Pedrós, Shifra Ben-Dor, Daniella Schatz, Amos Tanay, Shilo Rosenwasser, Assaf Vardi (2020): A single-cell view on alga-virus interactions reveals sequential transcriptional programs and infection states. *Science Advances* 6(21): eaba4137. DOI: 10.1126/sciadv.aba4137
21. **Chuan Ku**[#], Tsu-Wang Sun (2020): Did giant and large dsDNA viruses originate before their eukaryotic hosts? *Proceedings of the National Academy of Sciences of the United States of America* 117(6): 2747–2748. DOI: 10.1073/pnas.1919860117

20. **Chuan Ku**[#], Arnau Sebé-Pedrós[#] (2019): Using single-cell transcriptomics to understand functional states and interactions in microbial eukaryotes. *Philosophical Transactions of the Royal Society B* 374(1786): 20190098. DOI:10.1098/rstb.2019.0098
19. **Chuan Ku**, Uri Sheyn, Arnau Sebé-Pedrós, Shifra Ben-Dor, Daniella Schatz, Amos Tanay, Shilo Rosenwasser, Assaf Vardi (2019): Tracking infection dynamics at single-cell level reveals highly-resolved expression programs of a large virus infecting algal blooms. *bioRxiv*. DOI:10.1101/757542 (a modified version of this preprint is published as *Science Advances* 6(21): eaba4137)
18. **Chuan Ku**, Noa Barak-Gavish, Mark Maienschein-Cline, Stefan J. Green, Assaf Vardi (2018): Complete genome sequence of *Sulfitobacter* sp. strain D7, a virulent bacterium isolated from an *Emiliania huxleyi* algal bloom in the North Atlantic. *Microbiology Resource Announcements* 7(19): e01379-18. DOI:10.1128/MRA.01379-18
17. Noa Barak-Gavish, Miguel Frada, **Chuan Ku**, Peter A. Lee, Giacomo R. DiTullio, Sergey Malitsky, Asaph Aharoni, Stefan J. Green, Ron Rotkopf, Elena Kartvelishvily, Uri Sheyn, Daniella Schatz, Assaf Vardi (2018): Bacterial virulence against an oceanic bloom-forming phytoplankter is mediated by algal DMSP. *Science Advances* 4(10): eaau5716. DOI: 10.1126/sciadv.aau5716
16. William F. Martin, Mayo Roettger, **Chuan Ku**, Sriram G. Garg, Shijulal Nelson-Sathi, Giddy Landan (2017): Late mitochondrial origin is an artefact. *Genome Biology and Evolution* 9(2): 373–379. DOI:10.1093/gbe/evx027
15. **Chuan Ku**[#], William F. Martin[#] (2016): A natural barrier to lateral gene transfer from prokaryotes to eukaryotes revealed from genomes: the 70% rule. *BMC Biology* 14:89. DOI:10.1186/s12915-016-0315-9 (recommended by Faculty of 1000: <http://f1000.com/prime/726862983>)
14. **Chuan Ku**, Shijulal Nelson-Sathi, Mayo Roettger, Filipa L. Sousa, Peter J. Lockhart, David Bryant, Einat Hazkani-Covo, James O. McInerney, Giddy Landan, William F. Martin (2015): Endosymbiotic origin and differential loss of eukaryotic genes. *Nature* 524:427–432. DOI:10.1038/nature14963 (recommended by Faculty of 1000: <http://f1000.com/prime/725729035>)
13. **Chuan Ku**, Shijulal Nelson-Sathi, Mayo Roettger, Sriram Garg, Einat Hazkani-Covo, William F. Martin (2015): Endosymbiotic gene transfer from prokaryotic pangenomes: Inherited chimerism in eukaryotes. *Proceedings of the National Academy of Sciences of the United States of America* 112(33): 10139-10146. DOI:10.1073/pnas.1421385112
12. **Chuan Ku**, Mayo Roettger, Verena Zimorski, Shijulal Nelson-Sathi, Filipa L. Sousa, William F. Martin (2014): Plastid origin: Who, when and why? *Acta Societatis Botanicorum Poloniae* 83(4):281–289 DOI:10.5586/asbp.2014.045
11. Verena Zimorski, **Chuan Ku**, William F. Martin, Sven B. Gould (2014): Endosymbiotic theory for organelle origins. *Current Opinion in Microbiology* 22:38–48. DOI:10.1016/j.mib.2014.09.008
10. **Chuan Ku**, Wen-Sui Lo, Chih-Horng Kuo (2014): Molecular evolution of the actin-like MreB protein gene family in wall-less bacteria. *Biochemical and Biophysical Research Communications* 446(4):927–932. DOI:10.1016/j.bbrc.2014.03.039
9. Tean-Hsu Chang, Wen-Sui Lo, **Chuan Ku**, Ling-Ling Chen, Chih-Horng Kuo (2014): Molecular evolution of the substrate utilization strategies and putative virulence factors

- in mosquito-associated *Spiroplasma* species. *Genome Biology and Evolution* 6(3): 500–509. DOI:10.1093/gbe/evu033
8. **Chuan Ku**, Wen-Sui Lo, Ling-Ling Chen, Chih-Horng Kuo (2014): Complete genome sequence of *Spiroplasma apis* B31T (ATCC 33834), a bacterium associated with May disease of honeybees (*Apis mellifera*). *Genome Announcements* 2(1): e01151-13. DOI:10.1128/genomeA.01151-13
 7. **Chuan Ku**, Jer-Ming Hu (2014): Phylogenetic and cophylogenetic analyses of the leaf-nodule symbiosis in *Ardisia* subgenus *Crispardisia* (Myrsinaceae): Evidence from nuclear and chloroplast markers and bacterial *rrn* operons. *International Journal of Plant Sciences* 175(1):92–109. DOI:10.1086/673306
 6. **Chuan Ku**, Wen-Sui Lo, Chih-Horng Kuo (2013): Horizontal transfer of potential mobile units in phytoplasmas. *Mobile Genetic Elements* 3(5):e26145. DOI:10.4161/mge.26145
 5. Wen-Sui Lo, **Chuan Ku**, Ling-Ling Chen, Tean-Hsu Chang, Chih-Horng Kuo (2013): Comparison of metabolic capacities and inference of gene content evolution in mosquito-associated *Spiroplasma diminutum* and *S. taiwanense*. *Genome Biology and Evolution* 5(8):1512–1523. DOI:10.1093/gbe/evt108
 4. **Chuan Ku**, Wan-Chia Chung, Ling-Ling Chen, Chih-Horng Kuo (2013): The complete plastid genome sequence of Madagascar periwinkle *Catharanthus roseus* (L.) G. Don: Plastid genome evolution, molecular marker identification, and phylogenetic implications in asterids. *PLoS ONE* 8(6):e68518. DOI:10.1371/journal.pone.0068518
 3. **Chuan Ku**, Wen-Sui Lo, Ling-Ling Chen, Chih-Horng Kuo (2013): Complete genomes of two dipteran-associated spiroplasmas provided insights into the origin, dynamics, and impacts of viral invasion in *Spiroplasma*. *Genome Biology and Evolution* 5(6):1151–1164. DOI:10.1093/gbe/evt084
 2. **Chuan Ku**, Jer-Ming Hu, Chih-Horng Kuo (2013): Complete plastid genome sequence of the basal asterid *Ardisia polysticta* Miq. and comparative analyses of asterid plastid genomes. *PLoS ONE* 8(4):e62548. DOI:10.1371/journal.pone.0062548
 1. **Chuan Ku**, Liang-Chi Wang, Su-Hwa Chen (2012): Dispersal of airborne pollen in Chatienshan nature reserve, northern Taiwan, with emphasis on Taiwan beech. *Taiwania* 57(4):331–341.

Outreach articles

1. **Chuan Ku** (2022): 艾密利的鈣板世界：地球碳循環中的隱藏角色 [Calcifying microalgae and global carbon cycling]. *Academia Sinica Newsletter*. ([in Mandarin](#))
2. **Chuan Ku**, Bo-Wei Wang (2020): 海中的盔甲浮游植物 [Armored Marine Phytoplankton]. *MiTalkzine* 6:8-14. ([in Mandarin](#))

Invited talks at scientific meetings

6. **Chuan Ku**. On the origins of eukaryotes and eukaryotic giant viruses. Symposium “Major Microbial Transitions: From the origin of life to the origin of the domains”, 2022 Japanese Society of Microbial Ecology Annual Meeting (October 31–November 3, 2022), Sapporo Convention Center, Sapporo, Hokkaido, Japan.

5. **Chuan Ku.** Phylogenomic insights into evolution and inheritance of nuclear and organellar genomes. 2022 Annual Meeting of the Taiwan Society of Plant Biologists (October 1-2, 2022), Huisun Experimental Forest Station, National Chung Hsing University, Nantou, Taiwan.
4. **Chuan Ku.** Workshop on Flow Cytometry and Cell Sorting. 2022 MiTalk Meeting on Microbial Ecology (January 19-20, 2022), Tunghai University, Taichung, Taiwan.
3. **Chuan Ku.** Genome content evolution in giant viruses of eukaryotes. 2020 Multi-Omics and Precision Medicine Joint Conference (November 14-15, 2020), Chang Gung University, Taoyuan, Taiwan.
2. **Chuan Ku.** Single-cell transcriptomics: understanding viral infection at high resolution. 2019 Taiwan Society of Plant Biologists Annual Meeting (November 23-24, 2019), Taipei, Taiwan.
1. **Chuan Ku.** Single-cell transcriptomic dynamics of a large virus infecting a cosmopolitan alga. 2019 Taiwan Society of Microbial Ecology Annual Meeting (May 11, 2019), Taichung, Taiwan.

Other presentations at scientific meetings

20. Tzu-Tong Kao, Tzu-Haw Wang, **Chuan Ku.** Rampant nuclear-mitochondrial-plastid phylogenomic discordance in globally distributed calcifying microalgae. Botany 2022 (July 24-27, 2022), hybrid meeting hosted in the Dena'ina Center, Anchorage, Alaska, USA. (oral, online)
19. **Chuan Ku.** Phylogenomic discordance sheds light on genome inheritance in coccolithophores. Meeting on Advances in Coccolithophore Research (June 21-23, 2022), online meeting hosted in NORCE, Bergen, Norway. (oral, online)
18. Gur Hevroni, Flora Vincent, **Chuan Ku**, Uri Sheyn, Daniella Schatz, Assaf Vardi. Zooming in on host-virus dynamics of a bloom alga one cell at a time. 12th International Phycological Congress (March 22-26, 2021), Puerto Varas, Chile. (oral, online)
17. **Chuan Ku.** A single-cell view on alga-virus interactions reveals sequential transcriptional programs and infection states. American Society for Virology 39th Annual Meeting (June 13-17, 2020), Fort Collins, Colorado, USA. (abstract accepted for oral presentation; meeting cancelled due to Wuhan coronavirus pandemic; this talk was presented on June 17 as part of the online ASV Virtual Workshop) (oral, online)
16. **Chuan Ku.** Gene sharing patterns of giant eukaryotic viruses contradict core gene phylogenies. American Society for Virology 39th Annual Meeting (June 13-17, 2020), Fort Collins, Colorado, USA. (abstract accepted for poster presentation; meeting cancelled due to Wuhan coronavirus pandemic)
15. **Chuan Ku.** Single-cell RNA-seq for microbial eukaryotes: insights into infection of a cosmopolitan alga by its large DNA virus. Fourth Microbial Single Cell Genomics Workshop (September 22-26, 2019), Boothbay Harbor, USA. (oral)
14. **Chuan Ku.** Single-cell transcriptomic dynamics of a large virus infecting a cosmopolitan alga. 2019 EMBO Fellows' Meeting (June 12-16, 2019), Heidelberg, Germany. (oral)
13. **Chuan Ku**, Uri Sheyn, Arnau Seb -Ped s, Shifra Ben-Dor, Daniella Schatz, Amos Tanay, Shilo Rosenwasser, Assaf Vardi. Dynamics of viral infection in the ocean at the

- single-cell level. 17th International Symposium on Microbial Ecology (August 12-17, 2018), Leipzig, Germany. (poster)
12. **Chuan Ku**. Highly resolved transcriptomic dynamics of a large DNA virus at the single-cell level. Israel Society for Microbiology Annual Meeting (July 3-4, 2018), Be'er Sheva, Israel. (oral)
 11. **Chuan Ku**, Uri Sheyn, Arnau Seb -Ped s, Daniella Schatz, Amos Tanay, Shilo Rosenwasser, Assaf Vardi. Single-cell transcriptomics of host and virus dynamics in the ocean. Single Cell Genomics 2017 (October 16-18, 2017), Rehovot, Israel. (poster)
 10. **Chuan Ku**. Defining viral infection states of a bloom-forming marine alga with single-cell dual RNA sequencing. 11th International Phycological Congress (August 13-18, 2017), Szczecin, Poland. (oral)
 9. **Chuan Ku**. Endosymbiotic origin and differential loss of eukaryotic genes. Society of Molecular Biology and Evolution SMOB 2016 (July 3-7, 2016), Gold Coast, Australia. (oral)
 8. **Chuan Ku**, Shijulal Nelson-Sathi, Mayo Roettger, Filipa L. Sousa, Peter J. Lockhart, David Bryant, Einat Hazkani-Covo, James O. McInerney, Giddy Landan, William F. Martin. Bacterial origins of eukaryotic genes. Gordon Research Conference: Marine Microbes (June 19-24, 2016), Girona, Spain. (poster)
 7. **Chuan Ku**. Endosymbiotic origin and differential loss of eukaryotic genes. Bilateral Workshop Germany-Japan (March 22-23, 2016), National Institute of Genetics, Mishima, Japan. (oral)
 6. **Chuan Ku**, Shijulal Nelson-Sathi, Mayo Roettger, Filipa L. Sousa, Peter J. Lockhart, David Bryant, Einat Hazkani-Covo, James O. McInerney, Giddy Landan, William F. Martin. Endosymbiotic origin and differential loss of eukaryotic genes. Volkswagenstiftung "Kick-off Conference: Life? - A New Funding Initiative Introduces Itself" (December 17-18, 2015), Hanover, Germany. (poster)
 5. **Chuan Ku**, Shijulal Nelson-Sathi, Mayo Roettger, Filipa L. Sousa, William F. Martin. Endosymbiotic gene transfer in light of prokaryotic genome evolution. SMOB 2015 (July 12-16, 2015), Vienna, Austria. (poster)
 4. **Chuan Ku**, Mayo Roettger, Shijulal Nelson-Sathi, Filipa L. Sousa, William F. Martin. On the endosymbiotic origin of eukaryotic genes and apparent transfers from multiple prokaryotic sources. Sackler colloquium "Symbioses becoming permanent: The origins and evolutionary trajectories of organelles" (October 15-17, 2014), Irvine, USA. (poster)
 3. **Chuan Ku**, Wen-Sui Lo, Ling-Ling Chen, Chih-Horng Kuo. Complete genome sequences of two dipteran-associated *Spiroplasma* species provided insights into the viral invasion of *Spiroplasma* genomes. SMOB 2013 (July 7-11, 2013), Chicago, USA. (poster)
 2. **Chuan Ku** and Jer-Ming Hu. Identification of *Ardisia* (Myrsinaceae) leaf-nodule endosymbionts and cophylogenetic analyses of plant-bacteria symbiosis. 27th Annual Meeting of the Taiwan Society of Plant Biologists (November 13, 2010), Nantou, Taiwan. (oral)
 1. **Chuan Ku** and Su-Hwa Chen. Comparison of SEM microscopic structure of *Fagus L.* (Fagaceae) pollen from extant and fossil samples in Taiwan. 28th Symposium of the Microscopy Society of Taiwan (June 21, 2008), Taichung, Taiwan. (oral)

Other invited talks

- 15/03/2022 “Twenty years from now: my advice for high school students,” National Yilan High School, Yilan, Taiwan.
- 30/09/2021 “Diversity and genome evolution of giant viruses,” Department Seminar, Department of Plant Pathology and Microbiology, National Taiwan University, Taipei, Taiwan. (via Webex)
- 18/12/2020 “Exploring genome evolution in giant viruses,” IPMB Faculty Seminar, IPMB, Academia Sinica, Taipei, Taiwan.
- 16/10/2020 “My research experience in Germany,” DAAD and MOST Info Sessions on Education in Germany, GIS NTU Convention Center, Taipei, Taiwan. Host: Dr. Josef Goldberger.
- 28/05/2020 “Single-cell transcriptomics of giant virus infection,” TIGP Bioinformatics Seminar, Institute of Information Science, Academia Sinica, Taipei, Taiwan.
- 26/03/2020 “Giant viruses: From single-cell transcriptomics to genome evolution,” Department of Life Science, National Tsing Hua University, Hsinchu, Taiwan. Host: Dr. Gene Ng. (recorded talk)
- 06/12/2019 “Microbial eukaryotes: From genome evolution to viral infection,” Department of Life Science, National Taiwan University, Taipei, Taiwan. Host: Dr. Kuan-Hung Lin.
- 05/11/2019 “Microbial eukaryotes: From genome evolution to viral infection,” Institute of Tropical Plant Sciences and Microbiology, National Cheng Kung University, Tainan, Taiwan. Host: Dr. Chi-Chou Chiu.
- 18/06/2019 “Highly resolved expression programs revealed by single-cell RNA-seq of a large virus infecting a bloom-forming alga,” Department of Plant and Environmental Sciences, Weizmann Institute of Science, Rehovot, Israel. Host: Dr. Assaf Vardi.
- 18/09/2018 “Evolutionary origins of eukaryotic genes and the eukaryote-prokaryote divide,” National Museum of Natural Science, Taichung, Taiwan. Host: Dr. Yu-Ling Huang.
- 14/09/2018 “Evolutionary origins of eukaryotic genes and the eukaryote-prokaryote divide,” Institute of Ecology and Evolutionary Biology, Taipei, Taiwan. Host: Dr. Cheng-Ruei Lee.
- 03/04/2016 “Endosymbiotic origin and differential loss of eukaryotic genes,” Department of Plant and Environmental Sciences, Weizmann Institute of Science, Rehovot, Israel. Host: Dr. Assaf Vardi.
- 09/03/2015 “Origins of eukaryotic genes,” Biodiversity Research Center, Academia Sinica, Taipei, Taiwan. Host: Dr. Shu-Miaw Chaw.

Supervision, Teaching and Service

Staff supervision

- 2022– Dr. Maxime Allieux (Postdoc)
- 2022– Yu-chi Liu (senior RA)
- 2021–2022 Sheng Kao (RA)
- 2020– Dr. Ming-Wei Lai (Lab manager)
- 2020– Dr. Tzu-Tong Kao (Postdoc)
- 2021 Serge Ryndov (RA)
- 2020–2022 Siwat Chang (RA)
- 2019– Tzu-Haw Wang (RA)
- 2019– Chia-Ling Yang (RA)
- 2019 Bo-Wei Wang (Lab manager; now technician at Mission Biotech)

Student supervision

- 2022 Ho-Lin Chung (IPMB summer undergraduate intern)
- 2022– Hsin-Tung Lai (undergraduate research intern; IEEB master’s student [2022 fall admission])
- 2022 Abhishek Negi (TIGP MBAS lab rotation)
- 2021–2022 Alyzza Calayag (TIGP MBAS lab rotation and first-year PhD research)
- 2021 Yu-Hsin Huang (TIGP Biodiversity lab rotation)
- 2021 Iris Wu (undergraduate research intern)
- 2020–2021 Tsu-Wang Sun (master’s student, Genome and Systems Biology Degree Program)
- 2020–2021 Tong Jyun Tom Ho (undergraduate research intern)
- 2020 Shang-Hong Lin (IPMB summer undergraduate intern)
- 2020 Lê Thi Khanh Vi (TIGP spring international intern)
- 2019 Tsu-Wang Sun and Yi-Fang Chuang (IPMB summer undergraduate interns)
- 2019–2020 Tsu-Wang Sun (undergraduate student funded by Ministry of Science and Technology Research Grant 108-2813-C-001-033-B [01/07/2019–28/02/2020, NTD 48,000])

Course teaching

- 2022– Lecturer, “Transcriptional control of gene expression”, TIGP course “Basic Molecular Biology I”, Academia Sinica, Taiwan (08/11/2022)
- 2022– Lecturer, “Nucleocytoplasmic Large DNA Viruses: Virus-host interactions in environmental microbes”, TIGP course “Virus and Cell Interactions”, Academia Sinica, Taiwan (01/10/2022)

- 2022– Lecturer, “Microalgae: diversity and interactions”, TIGP course “Advanced Microbiology”, Academia Sinica, Taiwan (26/04/2022)
- 2022– Lecturer, “Single-cell omics: applications to plant, algal and microbiological research”, TIGP course “Molecular and Cellular Approaches to Biotechnologies”, Academia Sinica, Taiwan (07/03/2022)
- 2020– Course instructor, “Diversity and Evolution of Eukaryotes”, fall semester course at Institute of Ecology and Evolutionary Biology and Genome and Systems Biology Degree Program, National Taiwan University, Taiwan (2020 Fall; 2021 Fall [student rating: 4.42/5])
- 2020– Lecturer, “Eukaryotic microbes: from microalgae to giant viruses”, Department of Life Science course “Advanced Plant and Microbial Biology”, National Central University, Taiwan (10/06/2020; 16/06/2021; 08/06/2022)
- 2020– Lecturer, “Diversity of eukaryotic cellular structures”, Department of Life Science course “Microbiology”, National Taiwan University, Taiwan (27/04/2020; 29/03/2021; 28/03/2022)
- 2020–2021 Lecturer, “Omics”, TIGP course “Advanced Microbiology”, Academia Sinica, Taiwan (14/04/2020; 20/04/2021)
- 2020– Lecturer, “Eukaryotic microbes: evolution, diversity and ecology”, Biology Program for Selected Senior High School Students, Academia Sinica, Taiwan (in Mandarin) (11/04/2020; 06/02/2021; 12/02/2022)
- 24/03/2020 Lecturer, “Behind the Scenes of Scientific Publishing”, TIGP Biodiversity Seminar, Academia Sinica, Taiwan
- 2019– Student advisor, TIGP Molecular and Biological Agricultural Sciences Seminar, Academia Sinica, Taiwan
- 2014–2015 Teaching assistant, Perl for Biologists / Genomic Analyses, Institute of Molecular Evolution, Heinrich Heine University Düsseldorf, Germany
- 2009–2010 Teaching assistant, General Biology Laboratory, National Taiwan University, Taiwan

Graduate program affiliations

- 2020– Institute of Ecology and Evolutionary Biology (PhD and Master’s), National Taiwan University and Academia Sinica, Taiwan
- 2020– Genome and Systems Biology Degree Program (PhD and Master’s), National Taiwan University and Academia Sinica, Taiwan
- 2020– Bioinformatics Program (PhD), Taiwan International Graduate Program (TIGP), Academia Sinica and National Taiwan University/National Tsing Hua University, Taiwan
- 2020–2022 Marine Biotechnology PhD Degree Program, National Taiwan Ocean University and Academia Sinica, Taiwan
- 2020– Microbial Genomics PhD Degree Program, National Chung Hsing University and Academia Sinica, Taiwan

- 2019– Molecular and Biological Agricultural Sciences Program (PhD), Taiwan International Graduate Program, National Chung Hsing University and Academia Sinica, Taiwan
- 2019– Biodiversity Program (PhD), Taiwan International Graduate Program, National Taiwan Normal University and Academia Sinica, Taiwan
- 2019– Institute of Plant Biology PhD Program, National Taiwan University and Academia Sinica, Taiwan
- 2019– Department of Life Science PhD and Master's Programs, National Central University and Academia Sinica, Taiwan
- 2019– Department of Microbiology Master's Program, Soochow University and Academia Sinica, Taiwan

Organization of seminars/conferences

- 03/2021 Academia Sinica Meeting on Large-Particle Flow Cytometry and Sorting, IPMB, Academia Sinica, Taipei, Taiwan (March 3, 2021)
- 03/2021 IPMB-ABRC Joint Webinar by Dr. Patrick Shih (Dept. of Plant Biology, University of California, Davis, USA), IPMB, Academia Sinica, Taipei, Taiwan
- 06/2020 IPMB Seminar by Dr. Oliver Mueller-Cajar (School of Biological Sciences, Nanyang Technological University, Singapore)
- 10/2019 Ministry of Science and Technology Outstanding Lectureship by Prof. James Van Etten (Dept. of Plant Pathology, University of Nebraska-Lincoln, USA), with seminars at Academia Sinica, National Taiwan University, National Cheng Kung University and National Chung Hsing University, Taiwan

Referee service for scientific journals

[Web of Science](#)

Acta Protozoologica, Archives of Virology, BMC Evolutionary Biology, BMC Genomics, Evolution, Frontiers in Microbiology, Frontiers in Molecular Biosciences, Genes, Genome Biology and Evolution, Genomics, International Journal of Molecular Sciences, Journal of Applied Microbiology, Journal of Molecular Evolution, Microbes and Environments, Microbial Cell, Microbial Genomics, Microbiology Spectrum, Molecular Biology and Evolution, Molecular Ecology, Molecular Ecology Resources, Molecular Plant-Microbe Interactions, New Phytologist, Nucleic Acids Research, Plants, PLoS Genetics, PLoS One, Proceedings of the Royal Society B, Scientific Reports, Sustainability, Virology Journal

Referee service for grant funding agencies

National Research, Development and Innovation Office, Hungary (1 proposal in 2019; 1 in 2020)

National Science and Technology Council (Ministry of Science and Technology), Taiwan (5 in 2021; 5 in 2022)

Academia Sinica (1 in 2022)

PhD committees

- Hsiao-Jung Chiu, Annual Report, TIGP Molecular and Cell Biology, Academia Sinica and National Defense Medical Center (Advisor: Wen Chang) [29/11/2022]
- Chih-Ying Lu, Qualification Exam, TIGP Molecular and Biological Agricultural Sciences, Academia Sinica and National Chung Hsing University (Advisor: Sen-Lin Tang) [12/07/2022]
- Trevor Padgett, Qualification Exam (general questions), TIGP Biodiversity, Academia Sinica and Tunghai University (Advisor: Yi-Ching Lin) [07/05/2022]
- Kiran Kumar Eripogu, Qualification Exam (general questions), TIGP Biodiversity, Academia Sinica and National Taiwan Normal University (Advisor: Wen-Hsiung Li) [23/02/2022]
- Chen-Jui Yang, Thesis Defense, Institute of Ecology and Evolutionary Biology, National Taiwan University (Advisor: Jer-Ming Hu) [11/01/2022]
- Chia-Chun Tung, Qualification Exam (thesis proposal), Department of Life Science, National Taiwan University (Advisor: Ying-Chung Lin) [10/01/2022]
- Tsung-Yu Huang, Qualification Exam (non-thesis proposal), TIGP Molecular and Cell Biology, Academia Sinica and National Defense Medical Center (Advisor: Yen-Ping Hsueh) [12/08/2021]
- Tsung-Han Wu, Qualification Exam (thesis proposal), Genome and Systems Biology Degree Program, Academia Sinica and National Taiwan University (Advisor: Chun-Hua Hsu) [21/07/2021]
- Shang-Che Kuo, Annual Report, Genome and Systems Biology Degree Program, Academia Sinica and National Taiwan University (Advisor: Ying-Chung Lin) [16/07/2021]
- Yi-Chien Lee, Qualification Exam (thesis proposal), TIGP Biodiversity, Academia Sinica and National Taiwan Normal University (Advisor: Isheng Jason Tsai) [06/07/2021]

Master's thesis committees

- Pin-Chien Liou, Institute of Plant Biology, National Taiwan University (Advisor: Ying-Chung Lin) [08/07/2021]
- Chia-En Huang, Institute of Plant Biology, National Taiwan University (Advisor: Ying-Chung Lin) [08/07/2021]
- I-Jung Lin, Institute of Marine Environment and Ecology, National Taiwan Ocean University (Advisor: Chih-Ching Chung) [16/07/2020]

Service at IPMB

- Member of Committee on IPMB Strategic Planning (2023)
- Member of Committee on IPMB IT, Website and Social Media (2022; 2023)
- Member of Committee on IPMB Space & Environment (2021; 2022)
- Member of Committee on IPMB PI Recruitment (2021)
- Member of Committee on IPMB Genomics Core (2020)

Contribution to improvement of pedestrian space next to IPMB Building (2020)

Member of Committee on IPMB Cell Biology Core (2019; 2021–2023)

Member of Committee on IPMB Facebook Page (2019)

Service at Academia Sinica

Member of Admission Committee, MBAS graduate program, TIGP (2022)

Member of AS Dorm Committee (2021–2023)

Coordination among AS units for the purchase of a large-particle sorter (2021)

Member of Administrative Committee on AS Family Housing for New Faculty (2020–2021)

Service for International Communities

A national ambassador of Taiwan to the BioGeoSCAPES program for ocean metabolism and nutrient cycles on a changing planet (2022–)