THE INTERNATIONAL ORGANIZATION OF CITRUS VIROLOGISTS - IOCV

Message from the Chair

Dear IOCV Friends,
It is my pleasure to have the opportunity to reconnect with you. After our amazing IOCV conference in Riverside, CA in 2019 we all returned to our busy schedules and by the time we were able to catch our breath the SARS-CoV-2 global pandemic shut all of us down. I hope that you and your loved ones stayed healthy and safe, both mentally and physically, during these challenging times.

As expected with all viral systems, variants and mutations will cause shifts in the epidemiological course but as vaccines start having an impact on the pandemic, reducing hospitalizations and deaths, we can all see on the horizon a return to a new and better way of operating our labs, research, businesses and educational institutions. We all learned a lot about the vulnerabilities of our systems but also about the power of science and research as well as the resilience of the human spirit and the importance of family and community. As such, our IOCV family is ready to kick start again with our activities.

The time for the next IOCV conference is approaching fast. We are all grateful to our Chair-Elect Nerida Donovan and the Australian citrus growers and nurseries for keeping this effort moving forward despite all the difficulties. In this issue you will find information about a flexible hybrid model for the conference, including both 2022 webinars and a 2025 in-person meeting. This way we will be able to stay on cycle with our conference, elections and membership dues (please cover any unpaid 2019-2022 dues and renew membership for 2022-25 period at: http://journalofcitruspathology.com/iocv_membership.html) and make sure you inform your colleagues and collaborators about joining IOCV. In addition, this hybrid approach will maximize the impact and participation of the conference, while allowing for time to plan for any unforeseen epidemiological turns prior to the in-person meeting.

As we continue to nurture our peer reviewed Journal of Citrus Pathology (JCP, https://escholarship.org/uc/iocv_journalcitruspathology) into adulthood, I have to announce a few very pleasant developments. All our articles in JCP and IOCV Proceedings (1957-2010 Conferences, https://escholarship.org/uc/iocv_proceedings) now have DOI identifiers. One of the IOCV commitments and very important DOI rule is that whenever we reference JCP and

Proceedings papers, we must use the DOI identifier or risking losing DOIs for our publications. So please, make sure you use the appropriate escholarship reference as listed in the 3rd tab of each JCP and Proceedings article under "Authors & Article Info". In other words, we should all stop using the old style of reference with IOCV articles as part of the proceedings book and switch to this style: e.g., Tomimura, K., & Iwanama, T. (2011). Molecular Characterization of Satsuma Dwarf Virus Strains Collected in Japan. International Organization of Citrus Virologists Conference Proceedings (1957-2010), 18(18). http://dx.doi.org/10.5070/C59tb9c98t Retrieved from https://escholarship.org/uc/item/9tb9c98t. In addition the International Scientific Indexing (ISI, https://isindexing.com/isi/) has included JCP on its listings and as the number and frequency of published articles in JCP is increasing an impact factor will be assigned to the journal. Because our review return times still are very slow, we created a new article category "Recently Accepted" so that we can publish immediately, before copyediting the new articles. We also created a category for "Special Topics" so we can publish work that is valuable to our organization but does not fit the style of a technical journal article. These documents will now have an appropriate stable (vs. website links etc.) journal reference for use in our work. Please visit JCP, you will find some very interesting recently accepted articles and special topics on HLB management in California and citrus rootstocks in volumes 7 & 8. Finally, a reminder to all our membership, and especially to the 22 young scientists that received travel scholarships for the 2019 IOCV XXI conference in California, to submit your papers to JCP. We currently have 12 manuscripts in review and I am thankful to all editors, copy-editors and reviewers from around the world for their time and efforts and we promise that we will do our best to improve the response time of the JCP publication process.

Looking at the literature beyond JCP, the application of high throughput sequencing (HTS) technologies in citrus research has resulted in some recent, very interesting discoveries on the yellow vein disease and on the new coguvirus genus associated with citrus diseases such as concave gum and impietratura.

The five committees we formed to work on different topics for the 2019-2022 operations, namely Awards, Conference Location, Editorial and Publications, Bylaws Review and Coordination with other Citrus Organizations, have not had the chance to meet as we were hoping for. As the date of our next conference approaches we will once more activate their functions so we will be ready to address any issues in our business meeting.

I would also take this opportunity to thank John Da Graça, MaryLou Polek and John Hartung for their long service in citrus research and IOCV and congratulate them on their retirement. I would also like to share with you that our beloved Chet Roistacher is now 97 years old and even though age has slowed him down just a little bit, he is still as sharp as and as energetic as you remember him. He sends his love and hello to all of you and he wanted me to remind you that his books are available at Amazon.

As always, make sure you enjoy life, stay healthy and safe, do not forget your membership dues and Journal of Citrus Pathology submissions and stay tuned for news of the XXII IOCV Conference.

Georgios

Striving for the perfect pathology pic 😊

Stubborn (*Spiroplasma citri*) pathosystem

What's new in your journal?

First report of citrus virus A in South Africa
R Bester, M Karaan, G Cook, HJ Maree
http://dx.doi.org/10.5070/C481049000

Evaluating high-resolution computed tomography to study citrus tristeza virus-induced stem pitting
DJ Aldrich, R Bester, G Cook, A du Plessis, JT Burger, HJ Maree http://dx.doi.org/10.5070/C481050093

First comprehensive sanitary report of citrus viruses and viroids in Uruguay
MJ Benítez-Galeano, L Hernández-Rodríguez, F Dalmao, E Bertoni, A Bertalmío, L Rubio, F Rivas, D Maeso, R Colina http://dx.doi.org/10.5070/C481049181

Action Plan for Asian Citrus Psyllid and Huanglongbing (Citrus Greening) in California
C Albrecht, A Hicks, V Hornbaker, S Khalid, L Kumagai, D Morgan, and K Okasaki
http://dx.doi.org/10.5070/C471049054

Why we should care about culturing the Huanglongbing associated bacterium '*Candidatus* Liberibacter asiaticus': the importance of terms and interpretations
MV Merfa, L de La Fuente
http://dx.doi.org/10.5070/C471050303

Inability of the brown citrus aphid (*Toxoptera citricida*) to transmit citrus psorosis virus under controlled conditions
L Hernández-Rodríguez1*, A Bertalmio1, LRubio1, R Rolón1, D Maeso2, and F Rivas
http://dx.doi.org/10.5070/C471045702

Citrus dwarfing viroid reduces canopy volume by inhibiting shoot apical growth of navel orange trees grown on trifoliate orange rootstock

I Lavagi-Craddock, R Campos, D Pagliaccia, T Kapaun, C Lovatt, and G Vidalakis
http://dx.doi.org/10.5070/C471045369

You can find your international, peer reviewed, open access, online journal at

https://escholarship.org/uc/iocv_journalcitruspathology

Papers in JCP now have DOI's and are listed in Agricola.
We are working on adding the journal to other databases.
ISI is monitoring JCP for Impact Factor assignment.

IOCV is pleased to present a JCP special topic:

Citrus Rootstocks: Their Characters and Reactions

a previously unpublished manuscript by the late Prof. W.P. Bitters, University of California, Riverside.

Based upon Prof. Bitters research and many other sources, this work was compiled between the late 1960's and 1986. The manuscript was published in your journal as a Special Topic in April 2021.

http://dx.doi.org/10.5070/C481052938

Upcoming 2022 JCP special topic:

Economic Impact of California's Citrus Industry in 2020

… and how a 20% reduction in California citrus acreage due to biotic (e.g., HLB) or abiotic stress (e.g., availability of groundwater) would cause a loss of 8,213 jobs, $214 million in employee income, and reduce state GDP by $569 million.

What's new

Treasurer's Report

There is not much to report for this newsletter. IOCV typically only receives income from membership dues (payable at the conferences - please cover any unpaid 2019-2022 dues and renew membership for 2022-25 period at: http://journalofcitruspathology.com/iocv_membership.html), sales of the proceedings (which are essentially nil now that they are available on-line), and dividends from the Dreyfus investment. Expenditures are few (domain registration, incidentals) outside of expenses for the conferences (including the awards). Since we are currently between conferences, there is little financial activity as regards both revenue and expenditures.

As of 2021-09-30, the balance in the IOCV checking account (for miscellaneous expenses) stands at $5,081. IOCV also has an investment account that supports the Wallace, Schwartz, Gumpf, and Garnsey awards and an IOCV residual portion. As of 2021-09-30, the overall balance of the investment account was $32,230 distributed as follows: Wallace Award, $14,545; Garnsey Award, $13,755; Gumpf Award, $3,460; Schwartz Award, $432.72; IOCV residual, $35.34.

Robert R Krueger USDA-ARS-NCGRCD

IOCV conference

The XXI conference of the IOCV held in Riverside in March 2019 is a distant memory. The world has changed, we have changed, but our passion for science remains and we understand the benefits gained from reuniting the members of the IOCV family.

The announcement of the dates for the next face-to-face conference in Australia has been delayed due to the uncertainty of international travel during the global pandemic. It has been very difficult to make a decision so we asked you, the members, whether you wanted the next face-to-face conference to be held in 2023, or in 2025 with a virtual conference in 2022. The poll results were evenly split. Therefore, the local organising committee and the industry who will be supporting the conference have decided to wait until 2025. BUT the IOCV management committee is planning an on-line conference to be held in 2022 that will keep us connected and on cycle. Stay tuned for conference updates.

It has been a difficult time since we last met in California in 2019. Please send us your COVID-19 stories and photos so that we can capture our collective experience in our next newsletter.

iocvsecretary@gmail.com

Artists in Citrus Pathology

Submit your photos, sketches or paintings for the chance that your work will be featured on the cover of an issue of the Journal of Citrus Pathology. The work can represent a disease or citrus pathology related activities such as research or extension.

Prizes will be awarded at the next IOCV conference. Send your submissions to: iocvsecretary@gmail.com

Italy

A new serological method to detect citrus concave gum associated virus (CCGaV) in citrus and apple has been published.

Identification and Characterization of Citrus Concave Gum-Associated Virus Infecting Citrus and Apple Trees by Serological, Molecular and High-Throughput Sequencing Approaches
M Minutolo, M Cinque, M Chiumenti, F Di Serio, D Alioto, B Navarro (2021)
http://doi.org/10.3390/plants10112390

Australia

There is an improved diagnostic tool available for the newly described citrus viroid VII. Research is in progress to fully characterise this viroid and determine its potential economic impact on citrus.

Chambers GA, Geering ADW, Holford P, Vidalakis G, Donovan NJ (2022)
http://doi.org/10.1016/j.viromet.2021.114330

Please send us your country updates for our next newsletter.

iocvsecretary@gmail.com

United States

Huanglongbing (HLB) made headlines in 'The Economist' in May 2021. The article describes current collaborative work attempting to exploit the mobility of infectious RNA and develop a potential treatment for HLB. This work is being undertaken by Professor Georgios Vidalakis and his team at the University of California, Riverside and Professor Anne Simon's team at the University of Maryland.

https://www.economist.com/science-and-technology

Brazil

Juliana Freitas-Astúa was elected as the new Chair of the Brazilian Phytopathological Society (SBF) and will serve in this role from 2021 to 2025. SBF was created in January 1966 and has around 600 members. Congratulations to Juliana on her election.

Scientists in the Spotlight

Dr John V. Da Graça

Dr Da Graça recently retired as the leader of the Texas A&M University Kingsville (TAMUK) Citrus Centre in Weslaco after serving in leadership roles for 21 years. Before moving to Texas, Dr Da Graça spent nearly two decades working as a scientist (and later a professor) in South Africa at the Citrus and Subtropical Fruit Research Institute and the University of Natal. Among his many accomplishments, he helped to establish certified budwood programs in South Africa and Texas. John's dedication to industry and teaching ensures a lasting legacy. We wish Dr Da Graça all the best for his retirement.

Dr MaryLou Polek

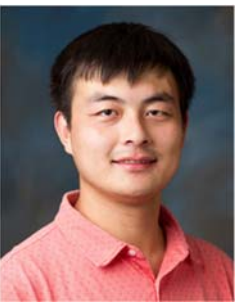
In July 2020, Dr Polek retired from her position as Research Leader of the National Clonal Germplasm Repository for Citrus and Dates, based in Riverside California, after dedicating 4 years to the United States Department of Agriculture, Agricultural Research Service (USDA ARS). Prior to her role at USDA-ARS, Dr Polek worked for the Citrus Research Board (CRB) as the organization's Vice President of Science and Technology. While working the CRB, she provided guidance to the CRB's portfolio of funded research projects, monitored the progress of those projects and collaborated with other funding agencies at the state and national level. We wish Dr Polek all the best for her retirement.

Dr John Hartung

Dr Hartung recently retired from his position as a Research Plant Pathologist with the United States Department of Agriculture, Agricultural Research Service (USDA-ARS) at Beltsville. In his role, he had an interest in pathogens of citrus classed as exotic to the United States. Dr Hartung established and maintained a collection of exotic citrus pathogens and developed rapid and sensitive DNA and RNA-based diagnostic tools to assist in plant quarantine and phytosanitary applications. These tools have been adopted globally for detection of significant biosecurity threats to citrus including citrus tristeza virus, citrus variegated chlorosis, huanglongbing and citrus leprosis. We wish Dr Hartung all the best for his retirement.

If you know of an IOCV member who has retired, please email their name and if possible, a tribute, to iocvsecretary@gmail.com so that we can honor their contribution to IOCV.

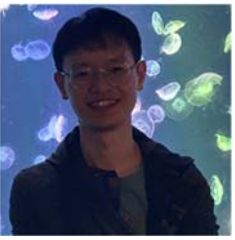
Young Scientists in the Spotlight



Dr Yong-Duo Sun

Dr Yong-Duo Sun is a young scientist investigating methods to manage the devastating citrus tristeza virus (CTV). He is currently working as a Post-Doctoral Fellow at the University of Florida where he received his PhD degree in 2019. In the time working with his PhD advisor, Dr Svetlana Folimonova, Dr Sun has been focusing on exploring the CTV pathogenicity and host-CTV interactions. In his latest study (New Phytologist, doi:10.1111/nph.17777), Dr Sun provided compelling new data on controversies of a long-standing question on how the CTV-induced stem pits initiate and develop. A new theory/model regarding the development of stem pitting was proposed. His findings challenged a traditional presumption about CTV as being a strictly phloem-limited virus and suggested that stem pitting originates from invasion of CTV into the xylem cells, including xylem parenchyma (ray cells) and developing xylem tracheary elements. The related work opened a new avenue for the CTV-xylem interaction and refreshed our understanding of virus niche expansion and pathogenicity. The results of this study might be extended to other virus-host pathosystems and aid the understanding of the mechanisms of the stem pitting-like diseases in other perennial woody plants such as citrus, apple, grapevine, etc. As a rising researcher in the field of plant virology, Dr Sun's endeavors will continuously contribute to managing tristeza disease in citrus orchards.

Background: Stem pitting is a common virus-induced phenotype that tremendously impacts growth and yield of perennial woody plants such as citrus, apple, grapevine, etc. However, the mode of stem pitting development remains poorly understood and debatable, due the longevity of studies in slow-growing woody plants and the difficulty of tracking the accumulation of viruses buried within the vascular tissue.



Dr Qiyan Liu and Dr Song Zhang

For ecosystems, viruses are not only plant pathogens, but also critical to a variety of ecosystem functions. Qiyan Liu concentrated on virus evolutionary aspects and got her master's degree with the research topic of "closterovirids in wild citrus" in the Citrus Research Institute of Southwest University of China, where Song Zhang will finish his doctorate on methodology of plant virus discovery in 2022. They published the research as co-authors in an article in the journal of PloS Pathogens (doi: 10.1371/journal.ppat.1009751). In this article they studied the virus diversity in wild citrus plants that provides important information to explore the factors facilitating outbreaks of citrus viruses and the evolutionary history of the family Closteroviridae.

Background: Closterovirids are principal plant pathogens for citrus trees and other plants, as they sometimes cause new or re-emerging diseases. However, the closterovirid diversity in natural plant hosts, especially citrus plants, is unclear. Liu et al. 2021 describes three novel species and citrus tristeza virus within the family Closteroviridae that were sampled from wild citrus trees growing in their natural habitat in southwestern China. The presence of three different taxon classes of the family Closteroviridae indicates the geographical uniqueness of the sampling region for citrus closterovirid evolution. Their analysis shows that frequent horizontal gene transfer, gene duplication, alteration of expression strategy, and recombination have been important evolutionary processes in the diversification of the family Closteroviridae. Our study also shows the significance of natural reserves as potential sources of disease agents endangering cultivated crop plants.

In Memoriam: Ricardo Flores Pedauyé

The IOCV committee is sad to announce the passing of our colleague Dr Ricardo Flores Pedauyé in December 2020.

Dr Flores was an exceptional scientist who undertook ground-breaking research to increase our understanding of graft-transmissible pathogens, particularly on viroid replication mechanisms, molecular structure, pathogenesis mechanisms and evolutionary origin. He also discovered the etiology of four viroid diseases of unknown cause.

Dr Flores published more than 180 scientific papers and several book chapters. He was a skilled editor serving as an associate editor or a member of the editorial board for nine international journals including Frontiers in Microbiology, Frontiers in Plant Science, Viruses and Virus Research. He was an ad hoc reviewer for countless more journals.

Dr Flores also mentored other scientists, including around 20 PhD students, 15 post-doctoral scientists and several visiting scientists. He was a long-term member of our IOCV family.

Dr Flores was past Chairperson (1993–2004) of the Viroids Study Group of the International Committee for Taxonomy of Viruses, and past Vice President of the Spanish Society for Virology (2007–2013). He was awarded many honors including the Biannual Award of the Spanish Society for Virology in 2003, became an Honorary Member of the Hungarian Academy of Sciences in 2008, and received the Plaque of Honor of the Spanish Association of Scientists in 2015.

Friends describe Ricardo as a kind and curious man, a tireless worker and an outstanding orator who will be deeply missed. He is survived by his wife Marita, their daughter María and their son Ricardo II, and his grandchildren who he affectionately called his ‘little ladies’.

A further tribute can be found at:

Hadidi A, Randles JW. (2021) Viroids, and the Legacy of Ricardo Flores (1947–2020). *Cells* 10, 2570. https://doi.org/10.3390/cells10102570

If you know of an IOCV member who has passed, please email their name and if possible, a tribute, to iocvsecretary@gmail.com so that we can honor their contribution to IOCV.

IOCV Conference Update

The next face-face IOCV conference will be held in AUSTRALIA.

We look forward to welcoming you to Mildura, on the banks of the Murray River in the Sunraysia citrus growing region. Mildura is a vibrant regional city surrounded by wineries and fruit growing farms. This will provide an ideal location for our IOCV family to reconnect, share knowledge and discuss how best to protect our industry from citrus diseases.

Key Dates

Abstracts open: June 2024

Registrations open: June 2024

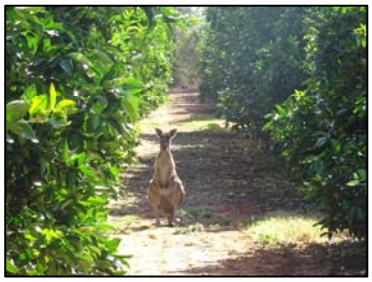
Abstract deadline: Nov 2024

Conference: March 2025

Conference venue: Mildura Arts Centre



Mid-conference tour: Auscitrus and NSW DPI facilities, local nurseries and orchards


Auscitrus propagation scheme

NSW Department of Primary Industries Institute

Travel to Mildura: there are direct flights to Mildura from major capital cities within Australia.
Travel to venue: there are accommodation options within walking distance of the conference venue.
Weather: in March the average daily temperature is 28°C, minimum 14°C
Post-conference tour – Riverland growing region followed by McLaren Vale, South Australia.



Upcoming Events

2022

IOCV on-line conference

- HLB
- citrus viral diseases
- citrus viroid diseases
- other citrus diseases, including emerging

October 2022

International Research Conference on Huanglongbing

California, United States

25-28 October 2022

November 2022

XIV International Citrus Congress

Mersin, Turkey

8-13 November 2022

www.citruscongressturkey.org

March 2025

IOCV conference

Mildura, Australia

Watch this space….