THE INTERNATIONAL ORGANIZATION OF CITRUS VIROLOGISTS - IOCV

NEWSLETTER **June, 2019**

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From the Past and New Chairman

Changyong Zhou, Past-Chairman

Dear IOCV Friends,

The Business meeting of the 20th IOCV Conference in 2016 decided that the 21st IOCV Conference would be jointly held with the IRCHLB. At first, I was worried it would be very difficult for local organizers to host such a large and long conference. It turned out that my worries were unnecessary. Thanks to the tremendous efforts and preparation of the Local Organizing Committees, the joint congress was a big success and won the acclaim of the participants! The attendance of the two conferences also hit a record high!

On behalf of the previous IOCV Board, I would like to take this opportunity to express my heartfelt thanks to the California Citrus Growers and the Citrus Research Board (CRB) for being the main sponsor of the joint conference. I would also like to thank Georgios Vidalakis, Jim Graham, MaryLou Polek, Wenbo Ma, Beth Grafton-Cardwell, Monique Rivera, Neil McRoberts, Melinda Klein, Ed Civerolo, Carolina Evangelo, Deborah Pagliaccia, Sohrab Bodaghi，Robert Krueger, Mengji Cao and other members of the Local Organizing Committees, as

well as other organizers, including the volunteers whose names I cannot remember, for their hard work and cooperation. My thanks also go to our colleagues who did the organizing work in the academic sections, presenters and sponsors. It was their contribution that made it a big success!

The IOCV, founded in 1957 at UCR, has held 21 conferences in 15 countries with pre- and post-conf. tours in 25 countries. Sixty-two years later, it returned to its birthplace. Its world-acclaimed reputation has won the recognition and active participation of its peers. In particular, two former Chairs and Fellows of the IOCV, Chester Roistacher and Luis Navarro, made an interesting historical review of the organization. 95-year-old Chester is still energetic and active. Chet also served as the IOCV secretary for many years. The successors should learn from and carry on the predecessors' inspiring spirit of dedication and commitment to the organization!

The joint congress mainly focused on the exchange of research progress during the past 2-3 years on citrus virus, virus-like diseases and Huanglongbing. Moreover, 12 keynote speakers were invited to introduce the latest progress in quite a few hot research fields and broaden the vision of conquering HLB. Although most of the keynote speeches were delivered during the meal time, they were enjoyed by most participants! In Chinese, the enthusiasm could be described as "neglecting one's sleep and meals" and "toiling night and day". This session also retained IOCV's tradition of visiting before, during and after the conference. During the five-day post-conference tour, we visited a variety of places and were impressed by the hospitality of the local organizers, some of whom are also senior members of IOCV, such as Raymond Yokomi. I would like to extend my sincere gratitude to them!

Citrus virus and virus-like diseases have been effectively controlled in many countries via virus-free propagation schemes. Although a few new viral diseases, such as Citrus yellow vein clearing, are prevalent in some Asian countries, the major challenge is still HLB! In response to this, major citrus producers like the United States, China and Brazil have gathered lots of manpower, material and financial resources to overcome the scientific and technological barriers of HLB. It's to be noted that many scientists who were not involved in the citrus industry have joined in the research of the HLB issue, and demonstrated their remarkable scientific achievements at this congress! Although the challenge is still great, we can always see the dawn of hope! Two of the three selected IOCV fellows (Tim Gottwald and Jim Graham) are dedicated to the prevention and control of HLB, and the other (Joe Semancik) is a pioneer in the study of citrus viroids. Once more, I'd like to congratulate them for their achievements!

This congress also partially or fully funded the largest number of young scientists to ever attend the conference. Furthermore, the incumbent Chair Georgios, Chair-elect Nerida and Secretary Mengji are all young scientists full of vigor. IOCV has no lack of successors. I would like to avail of this opportunity to express my heartfelt thanks to the members of the previous Board and all IOCV members for their support during

my tenure! The new Board is full of passion. Remarkably, Georgios mobilized almost his whole family and research group to host this joint congress. I firmly believe that IOCV will be able to flourish under the leadership of the new Chairman Georgios. As the Past-Chair of the Board, I'm willing to do my bit.

Finally, I wish IOCV MORE SUCCESS!
With warm regards and best wishes.
Changyong

Georgios Vidalakis, Chairman

Dear IOCV Friends,
It is my great honor and privilege to start this year my service as the 21st IOCV Chair. First I would like to thank Changyong Zhou for his leadership and service as the past IOCV Chair and congratulate Nerida Donovan for her election as Chair-Elect. I am looking forward to working with both of them at the IOCV Board of Directors.

In my previous newsletter message, I set two major goals for my tenure as chair-elect and chair: (i) A successful well-attended IOCV conference and (ii) A robust peer reviewed Journal of Citrus Pathology. I would like to thank all of you for making my efforts to meet the first goal very easy. It was through your enthusiastic and constructive participation that in March 2019 we successfully completed the Joint 21st Conference of the IOCV and the 6th International Research Conference on Huanglongbing (IRCHLB) at Riverside, California, U.S.A.

IOCV returned to Riverside for the first time since the very first Citrus Virus Disease Congress, held in 1957 in Riverside in celebration of the 50th Anniversary of the founding of the Riverside Citrus Experiment Station in 1907. This year's IOCV conference was probably the biggest in the history of our organization with 209 delegates representing 23 countries, 22 sponsored young scientists and 39 oral and 26 poster presentations. For the first time in the 62 year history of our organization, in addition to the sessions covering graft-transmissible and viral pathogens of citrus, a session on topics of citrus pathology on non-viral citrus pathogens was part of our conference.

Working towards my second goal we will focus in the next few weeks on the publication of the conference abstracts at the Journal of Citrus Pathology. However, without your scientific contributions our Journal will not be successful. Once more, I would like to urge you to encourage your teams (students and researchers) to submit short communications and full articles of the work you presented at the conference or otherwise. Special reminder to the 22 young scientists that received scholarships to attend the conference. It is part of the scholarship requirement and agreement with the IOCV and organizing committee that you will submit a paper at the Journal of Citrus Pathology. We are looking forward to your submissions.

Since the end of the conference the IOCV Board of Directors holds regular teleconference meetings so we can stay on track with the action items as discussed at

our 2019 business meeting. We have formulated five committees 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. Chairs and members of the committees will receive their invitations in the next few weeks.

The battle against Huanglongbing (HLB) is ongoing in California. The Asian citrus psyllid (ACP) is now spread in all citrus producing areas in California and the number of positive HLB trees in the residential areas of Los Angeles and southern California are now over 1,250.

Enjoy life, do not forget your Journal of Citrus Pathology submissions and thank you for making the 21st IOCV Conference and the 6th IRCHLB a success.
Georgios

From the 2019-2021 Chair Elect

Nerida Donovan

Dear IOCV members,
I am excited and honoured to have been voted Chair Elect for the IOCV. For those members that I have not yet had the pleasure to meet, I have been working as a Citrus Pathologist in Australia for nearly 20 years, based at the Elizabeth Macarthur Agricultural Institute (EMAI) near Sydney. There are a number of devastating citrus diseases we are fortunate not to have in Australia, including huanglongbing (HLB). Whilst the citrus pathology team at EMAI works on all pathogen types, our main focus is on graft-transmissible organisms; reducing the impact of endemic viruses and viroids and preparing for incursions of new pathogens. We highly value our connection with fellow members of the IOCV which helps us with this work.

I would like to congratulate our IOCV Chair Georgios Vidalakis, the Citrus Research Board (CRB), and their teams on their outstanding efforts in organising our 21st IOCV conference in Riverside, held in conjunction with the 6th International Research Conference on HLB. I wish to make a special mention of Carolina Evangelo and the CRB staff that attended to all our needs during the conference. I am sure those who attended will agree that everything was taken care of, and was of a high standard, so that we could focus on the science and on building strong connections. It was great to see the members of the IOCV family united once again and motivated to continue the traditions of our organisation where knowledge and friendship is shared. Over the course of the conference, we laughed at the wonderful stories, and we shed a tear over members we have lost.

As Chair Elect I am dedicated to contributing to a successful and collaborative IOCV community, which will allow its members to produce quality science and deliver practical outcomes for the citrus industry in their regions, and worldwide. As has been faced many times over the years, disease is changing the course of the citrus industry and united we face the challenge. Kind regards,
Nerida Donovan

The XXI Conference of the International Organization of Citrus Virologists March 10 - 15, 2019, Riverside, California, USA

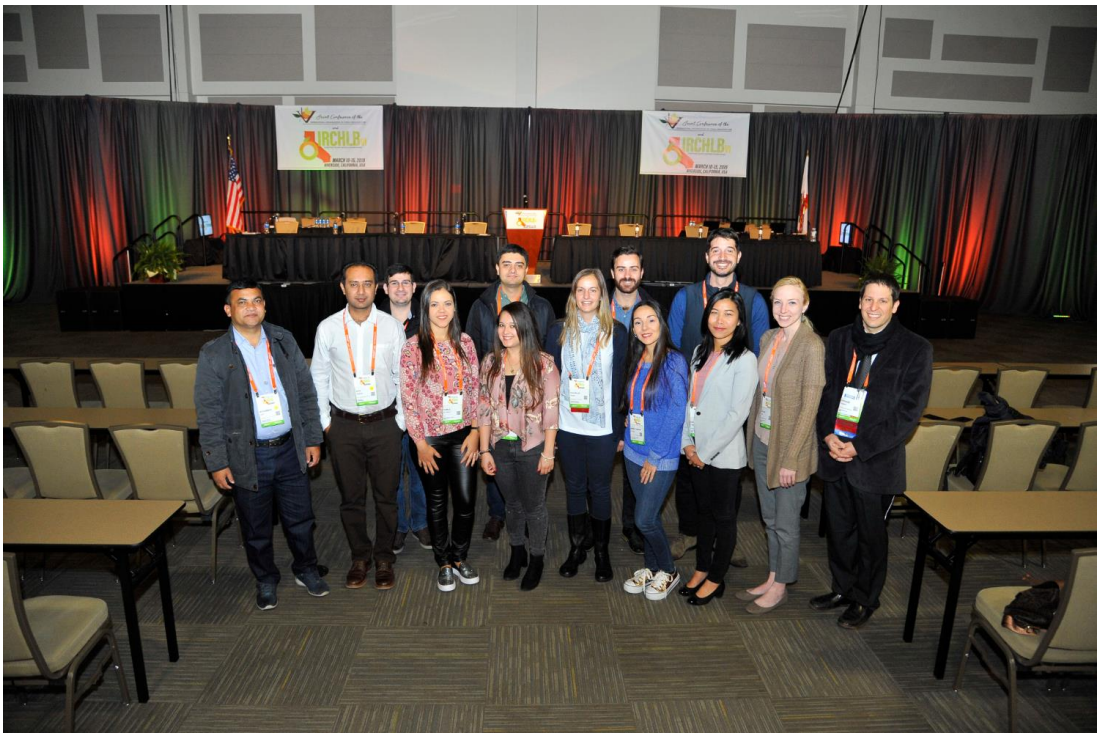
IOCV Welcome Reception and Dinner

Coffee Break and IOCV General Session

IOCV Opening and Welcome

Chester Roistacher gave a talk about IOCV History

Luis Navarro gave a talk about Citrus Programs



Scholarship Recipients

Name	Country	Institution
Rachelle Bester	South Africa	Stellenbosch University
Idara Essien Etim	Nigeria	University of Ibadan
Maria Florencia Palacios	Argentina	Estación Experimental Agroindustrial Obispo Colombres
Yilian Llanes Alvarez	Cuba	Institute of Tropical Fruit Research
Camila Chabi-Jesus	Brazil	University of São Paulo
Victoria Macarena Gardella Ruiz	Argentina	Instituto de Biotecnología y Biología Molecular
Everton Carvalho	Brazil	São Paulo State University
Kellee Britt	United States	University of Florida
Runxian Yao	China	Hunan Agricultural University
Meilyn Rodríguez	Cuba	Center for Genetic Engineering and Biotechnology
Sagheer Atta	Pakistan	Ghazi University Dera Ghazi Khan
Mounira Inas Drais	Italy	Tuscia University
Naweena Thapa	United States	University of Florida
Jefferson Rangel da Silva	Brazil	Centro de Citricultura Sylvio Moreira/IAC
Dirk Aldrich	South Africa	Stellenbosch University
Lester Hernández Rodríguez	Uruguay	National Institute on Agricultural Research
Shimin Fu	China	Southwest University
Marcus Vinicius Merfa e Silva	United States	Auburn University
Yu Bin	China	Southwest University
María José Benítez Galeano	Uruguay	Universidad de la República
Mohammad Rashidul Islam	Bangladesh	Bangladesh Agricultural University
Dilip Kumar Ghosh	India	ICAR - Central Citrus Research Institute


Mid-Conference Tour


Mid-Conference Tour; IOCV Officers


Poster Session; IOCV Closing Banquet & IRCHLB Reception and Dinner


IOCV Closing Banquet & IRCHLB Reception and Dinner

XXI IOCV Business Meeting Minutes & Summary

Riverside, California, USA, March 12, 2019

AGENDA

1. Welcome (CY Zhou)
2. Secretary's report (M Cao)
3. Treasurer's report (R Krueger)
4. Steve and Rosalee Garnsey Award (G Vidalakis)
5. IOCV Fellows Nominations and Voting
6. Next IOCV Conference (M Cao)
7. IOCV/IRCHLB Partnership Discussion (G Vidalakis & IRCHLB Executive Committee Leadership J Graham & T Gottwald)
8. Adjourn (CY Zhou)

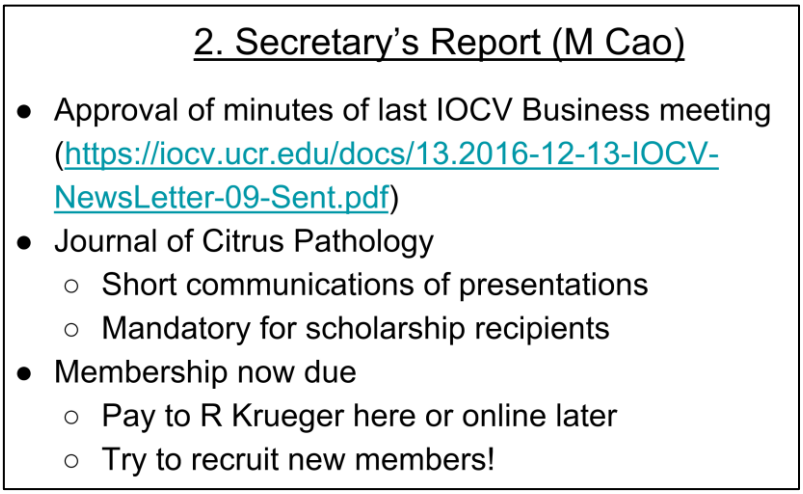
IOCV Business Meeting

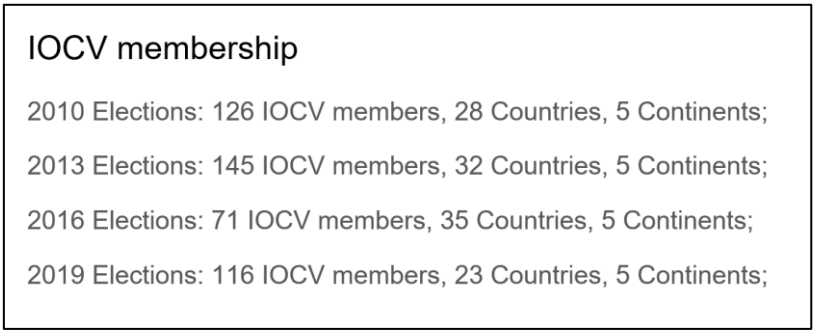
BUSINESS MEETING MINUTES & SUMMARY

Mengji Cao: Presented the agenda.

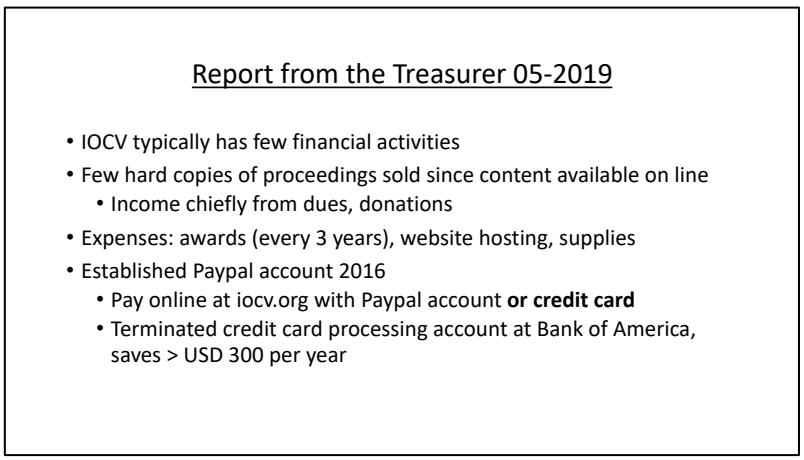
Changyong Zhou: Convened meeting. Opened the meeting at 9:15 am. Welcomed everyone, thanked the XXI IOCV organizing committee, volunteers and participants. Reported two issues: a. Chair election; b. Bylaws review committee. Motion by Georgios Vidalakis to approve, second by Sohrab Bodaghi, no discussion, motion passed unanimously.

Mengji Cao: Secretary's Report. Proceeded to the presentation of the minutes and requested a motion for their approval. Motion by Georgios Vidalakis to approve minutes, second by Juliana Freitas-Astúa, no discussion, motion passed unanimously. Asked everyone submit short communication to Journal of Citrus Pathology. It is mandatory for scholarship recipients. Final number of conference participants – 224 for IOCV; 548 HLB; Total number is 563. Asked everyone to renew their membership and encourage more members to join.





Robert Krueger: Treasurer's report (updated for this newsletter with post-conference numbers). Motion by Mengji Cao to approve, second by MaryLou Polek, no discussion, motion passed unanimously.



Report from the Treasurer 2019
Dreyfus Investment Fund (Awards, etc)

- Wallace: Best paper at IOCV Conference
  - Last meeting: pending redirection due to full papers not being published → outstanding paper in J Citrus Pathology
- Schwartz: Travel for young scientists
  - Largest expense
- Gumpf: Best Certification paper
  - Not yet awarded
- Steve and Rosalee Garnsey:
  - New 2018: Outstanding virology paper or travel support
- IOCV: General investment

Report from the Treasurer 2019
Fund Balance Current & Previous Conference

Date	Total	Checking	Dreyfus Total	Wallace	Schwartz	Gumpf	Garnsey	IOCV
12/31/15	32,258	2,618	29,640	12,803	7,005	3,017	0	6,815
12/31/18	48,520	4,884	43,636	13,354	7,618	3,177	12,379	7,108
05/01/19	33,507	4,014	29,493	13,354	300	3,177	12,629	32

- Expenses from current conference USD 20,000 + additional awards
- Schwartz and IOCV funds expended: no support for early career travel support

Report from the Treasurer 2019
Excerpt from Correspondence from Jane Wallace

- Dr James Wallace's daughter was contacted for permission to change award as per previous slide.
- "I certainly take the Board's recommendation on this. I appreciate being asked. It is gratifying to see the IOCV going along all these years, and I thank all of you who have been responsible!"
- "I remember fondly quite a few of my father's scientific friends and associates from days gone by. Primary were Drs. Rossetti, Bove, Scaramuzzi (sp.?), and quite a few of the Italians. Many of the names I have read about in the IOCV Newsletters over the years are familiar. But when I consider that I am now 80 and my parents would be 116 and 117, it telegraphs how many years have gone by! Chet is the young one, and he seems to be keeping up that position very well."

Georgios Vidalakis: Steve & Rosalee Garnsey Award. Motion by Georgios Vidalakis to approve, second by MaryLou Polek, no discussion, motion passed unanimously.

Mengji Cao: IOCV Fellows nominations and voting. Invited the speakers for the IOCV fellow nominations.
Robert Krueger: Presented the nomination of Jim Graham by Pete Timmer.
Georgios Vidalakis: Presented the nomination of Joe Semancik by Nuria Duran-Vila & Georgios Vidalakis.
Bill Dawson: Presented the nomination of Tim Gottwald by Bill Dawson.
(Note: see below for nominations text)
Motion by Juliana Freitas-Astúa to approve all three as a package, second by Dr. Kitajima, no discussion, motion passed unanimously. Congratulations to the new fellows. Georgios read a message from Joe Semancik that could not attend the conference.

Mengji Cao: Next IOCV Conference
Nerida Donovan proposed. **Australia** shows an interest to host next IOCV conference. Since HLB is not present in Australia, it would be difficult to attract financial support to host a joint IOCV / IRCHLB conference. Showed slides.

- Conference: Mildura, Victoria at the Mildura Arts Centre
- Mid-conference tour: Auscitrus propagation scheme
  Dareton research station NSW DPI
  Commercial nursery and orchard
- Post-conference tour: Central Burnett, Queensland OR
  Harvey, Western Australia OR
  Sydney, NSW (less an option – maybe pre-conference?)

No other countries proposed. Changyong Zhou said the Bylaw dictates that we need to organize a committee to make a decision on where to host the next meeting. A formal proposal to host the conference will be submitted to the IOCV committee.

G Vidalakis & IRCHLB Executive Committee leadership (Jim Graham & Tim Gottwald): IOCV/IRCHLB Partnership Discussion
Proposed both committees to have a presence at the IOCV business meeting
· Jim Graham – IRCHLB was in Orlando, FL until we got very nice invitation to come to Riverside, CA – glad that this happened.

- HLB is the overlap of the two programs.
- Attendance of IOCV is higher than normal.
- If partnered with IOCV could move the IRCHLB internationally, that's why we call it an international meeting.
- Pre /post conference tours are traditions of IOCV conferences, not the IRCHLB

·Georgios Vidalakis – Coordination on administrative level – IOCV is capable of doing it.

- First discussed at the 2016 IOCV conference
- Hold the IRCHLB every 3 years?
- Hold both conferences together or separately?

·Jim Graham – have been on 2 year cycle (IRCHLB)

- Will discuss this proposal at the IRCHLB steering committee meeting
- The steering committee meeting is by invitation only, please talk to J. Graham if

interested joining.

·Luis Navarro - difficult to coordinate a joint conference and administration of different organizations but could coordinate with the ISCN or ISC

·Georgios Vidalakis – Idea of a common citrus organizations online hub was discussed at the 2016 ICC in Brazil.

- Offer a discount if want to become a member of all organizations ISCN, ISC, and IOCV
- Joint conference could offer joint membership
- Opportunities for sessions that are of interest to other citrus scientific or industry organizations during joint conferences

Motion by Luis Navarro - find opportunities for collaboration other than hosting a joint conference since it will be difficult to coordinate these large organizations (ISCN, ISC, and IOCV).

Motion Discussion

·Glenn Wright - some citrus disciplines "don't have a home"

- could bring them all together under one umbrella - "international citrus pathology conference" – for HLB, mycology, virology etc. publish joint journal

·John da Graca – another option is to join with the Citrus biotechnology group - International Symposium on Citrus Biotechnology – under ISHS

·Luis Navarro – difficult, the citrus biotechnology meeting is very focused on genetics

·MaryLou Polek – should keep "international" in mind as we think through the process

·Nerida Donovan – joining the conferences has been great, but if we hold a large joint conference each time, there will be fewer opportunities to present, particularly for younger scientists

·Bill Dawson – IOCV has always been a smaller conference; it has been its strength not to have huge numbers of concurrent sessions

·Juliana Freitas-Astúa – hundreds of people will be difficult to organize, second Nerida's thoughts

·Luis Navarro – does not want to dilute IOCV

·Georgios Vidalakis – if can tie members together it would be good. IOCV is critical.

·Changyong Zhou – if hosted in US, China, or Brazil, there is the opportunity to merge the IOCV and HLB meetings.

- When the IOCV conference is hosted in other countries, maybe we can hold it separately.
- Based on the bylaws, IOCV is for the virus, if we changed, then we have to reform the bylaws, need a review committee to do this ASAP

·Georgios Vidalakis – It is important to protect the IOCV brand. This year all leaders of ISCN, ISC, and IOCV are from California. We have the opportunity to have the discussion and identify opportunity for coordination but maintaining the identity of each organization.

·Mike Irey – we have the International Society of Sugar Cane Technologists (ISSCT). ISSCT keep the different families by having workshops, some people don't want to go to international meetings, but will go to workshops.

- Could have a big joint conference every few years, but smaller "workshops" in

different locations frequently.

·Bill Dawson – Incorporating IOCV with IRCHLB is a good idea, but this is not the right time to talk about any merger of the HLB and IOCV conferences because the group of people working on HLB will not always be large. We are right now in an HLB funding and research bubble and in 5, 7, 10 years from now the number of people working on HLB will probably be 10% of what it is now and that would be the right time to incorporate the IRCHLB in to the IOCV conference, which is how it should be, but now is not the right time.

Earlier Motion by Luis Navarro -Second by Subhas Hajeri to explore opportunities for collaboration on joint conferences or otherwise with organizations such as ISCN, ISC, and IOCV, was repeated.

-Motion passes unanimously

Changyong Zhou: Adjourn. Meeting closed at 10:52 am.

Tree Ceremony

2019 IOCV Fellow Nominations

Jim Graham

To: Members of the IOCV Board of Directors
From: Pete Timmer
Subject: Nomination of Jim Graham for Fellow of IOCV

Jim has made highly significant contributions to the understanding of many citrus diseases. Those advances have been beneficial to the management of these diseases, not only in Florida, but also throughout many citrus areas of the world.

Jim received his B.S. degree in Biological Sciences from the University of California, Irvine in 1974. Subsequently, he received his Ph.D. from Oregon State in Mycology/Soil Science in 1980. He then went on to the University of California, Riverside and worked on arbuscular mycorrhizae with John Menge. From 1981 until his retirement, he worked at the Citrus Research and Education Center of the University of Florida as Professor of Soil Microbiology. Over the years, he has had primary responsibility for research on soil borne diseases, mycorrhizae, and citrus canker and related areas. After the discovery and spread of Huanglongbing in the state, he developed a program to investigate various aspects of that disease.

Throughout his career, Graham has maintained a program on mycorrhizal fungi, emphasizing the costs and benefits to the host. With Dave Eissenstat, he developed methods to study the interactions of phosphorus supply and mycorrhizal fungi on the carbon economy of citrus. They were the first to demonstrate the carbon cost of mycorrhizae in the field. They were also the first to study mycorrhizal effects on the ecophysiology of roots of mature trees and found that mycorrhizae increase root longevity in dry soils. With several collaborators, Graham explored the broader implications from cost/benefit analyses in relation to the functioning of mycorrhizae.

Jim has made numerous contributions to understanding of Phytophthora diseases of citrus. One of his major contributions, with Pete Timmer, was the development of a quantitative assay for soil populations of *P. nicotianae* that allowed determination of the effect of root rot on yields. He discovered that *P. palmivora* was a major pathogen in Florida and elucidated its role in brown rot of fruit. With Larry Duncan, he determined that it was involved with a serious decline disease associated with the root weevil, *Diaprepes abbreviatus*. He has clarified the etiology of these diseases and determined the role of each species of the pathogen in foot rot (gummosis), root rot and brown rot of fruit in Florida. The quantitative method he developed has allowed more precise determination of the effects of fungicides, the susceptibility of rootstocks, and the effect of cultural practices on the root rot caused by this oomycete. His research has provided results useful to growers and allowed much better management of Phytophthora diseases.

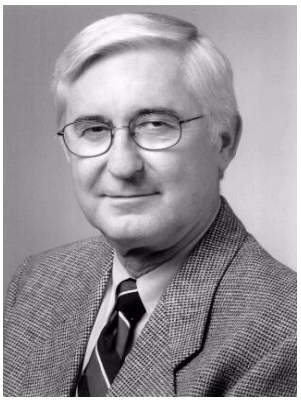
When citrus canker was discovered in Florida in the mid-1980s, Jim made major contributions to research on xanthomonads and advised regulatory agencies and the citrus industry. He characterized citrus bacterial spot, a nursery disease that was confused with canker and resulted in the eradication of many nurseries. He cooperated with the Citrus Canker Eradication Program and conducted research and provided information aimed at improving control and eradication of canker. With Tim Gottwald, he demonstrated that the 125-ft eradication radius was inadequate to suppress the spread of citrus canker. Eventually, the eradication program proved to be unsuccessful after several hurricanes in 2004–2005, and Jim developed programs to manage canker by regulatory means, the use of windbreaks and copper bactericides. His research provided a better understanding of bacterial resistance to copper products and antibiotics. Jim was instrumental in demonstrating the value of windbreaks in reducing disease spread and severity. He also developed a precise inoculation method for evaluation of resistance and assessment of control products. He was a leader of the Citrus Health Response Plan and worked with nurserymen and growers to revise completely the citrus nursery industry in Florida and move it from the field to screened enclosures to provide trees free of canker and huanglongbing.

When Huanglongbing entered and spread widely in the state, Jim initiated a program on that disease. With Evan Johnson and other cooperators, they demonstrated that the causal bacterium moved quickly to the roots and aggravated root rot caused by other pathogens. A popular nutritional program used by growers was demonstrated to be ineffective in controlling the disease. He also investigated the effects of resistance genes in citrus in the suppression of HLB.

Jim is widely recognized in citrus pathology for his many contributions to the understanding of disease problems and their management. He served as an associate editor of Phytopathology, has been an editor for Plant & Soil, the New Phytologist, and APS Press. Graham received the Lee Hutchins Award for his contributions to the understanding of canker and bacterial spot. In 2007, he was named a Fellow of the American Phytopathological Society. He is a University of Florida Research Foundation Professor. Many students have been trained in his lab over the years and many visiting scientists have come to CREC to receive additional experience under his guidance. He has helped organize and develop the programs for many of the International Research Conferences on Huanglongbing held in Orlando, Florida.

Jim Graham is richly deserving of the Fellow award. As noted above, he has made significant contributions to the understanding and management of many diseases.

Joseph Semancik



To: Members of the IOCV Board of Directors
From: Nuria Duran Vila and Georgios Vidalakis
Time: March 7, 2019

Dear IOCV,

The discovery of VIROIDS in the late 1960s early 1970s as a unique class of plant pathogens is linked to the studies regarding the causal agents of two diseases: potato spindle tuber and citrus exocortis. The studies that addressed the discovery of this new kind of plant pathogens were conducted independently by two groups, one of which was led by Prof. J. S. Semancik at UC Riverside.

Prof. Semancik received his degree in biology from Western Reserve University, Clevelant, OH in 1960. He then received his MSc and PhD in plant pathology from Purdue University, IN in 1962 and 1964, respectively. He joined the Dept. of Plant Pathology at UC Riverside as an assistant professor in 1964, and in 1969 accepted the position of associate professor at the University of Nebraska, Lincoln, NB. He returned at UC Riverside in 1972 from where he retired in 2004. During the last two years of his career at UC Riverside, Prof. Semancik served as the interim director of the Citrus Clonal Protection Program (CCPP), after the untimely death of Prof. and IOCV treasurer, David Gumpf. Prof. Semancik was honored by IOCV as the recipient of the Wallace Award, was named NATO Senior Scientist and Guggenheim and American Phytopathological Society Fellow, and received the Alexander von Humboldt Award.

During his 40-year long career he established the foundation of what we know today as the research field of citrus viroids. He published over 100 scientific manuscripts but most importantly he trained dozens of scientists who contributed and continue to contribute significant milestones in the area of citrus viroids. Prof. Semancik and his collaborators deciphered the exocortis disease enigma and discovered the first citrus viroid. Prof. Semancik optimized the use of CF-11 cellulose chromatography to separate citrus viroid RNAs, and his team developed sequential polyacrylamide gel electrophoresis (sPAGE) with discontinuous pH for enhanced resolution of circular and linear molecular viroid forms. On that basis, Prof. Semancik, and his team that at that time included Dr. Nuria Duran-Vila, characterized the viroid RNAs causing what it was described as “mild”, “moderate” and “severe” exocortis reactions in ‘Etrog’ citron, and determined that many other viroid-like RNAs with distinct electrophoretic mobility and biological properties existed. These RNAs were then classified to groups I, II, III and IV, and further work from Prof. Semancik’s team and the graduates of his UC Riverside laboratory concluded that these groups are actually distinct citrus viroid species such as citrus bent leaf viroid,

citrus dwarfing viroid, and citrus bark cracking viroid. Prof. Semancik, his team, and his graduates also identified and characterized the causal agents of the cachexia-xyloporosis diseases. This work presented at the 10th IOCV Conference and Prof. Semancik and his collaborators received the Wallace Award. Prof. Semancik and his team studied many different aspects of viroid biology including replication, pathogenicity and intra-population variability. His work on citrus exocortis viroid brought to light the property of the viroid to produce increased in size RNA molecules by terminal repeats. Prof. Semancik and his team, including Dr. Georgios Vidalakis, also performed field trials and coined the term Transmissible small nuclear RNA (TsnRNA) for well-characterized viroid RNA species that do not induce any pronounced disease syndromes in specific citrus hosts, but rather act as regulatory genetic elements modifying tree performance. This work opened the road for approval and use in California of TsnRNAs to produce dwarfed citrus. This technology is now studied as a potential tool for the planning of high-density, dwarfed, under protective structures citrus orchards as a cultural management practice against Huanglongbing.

The two IOCV members co-nominating Prof. J. S. Semancik as IOCV Fellow studied in his UC Riverside laboratory and collaborated with him as researchers, so we would like to share with the IOCV membership aspects of the person and scientist Semancik that you cannot see or experience by reviewing the scientific literature. Nuria joined the UC Riverside team in 1979 as a “tissue culture” expert, giving her the opportunity to follow the achievements that were being accomplished by the Semancik’s team members. This marks the beginning of where we stand today with citrus as a crop handling as many as eight different citrus viroids. Georgios joined Prof. Semancik’s laboratory as a PhD student in 2000, and was assigned to study the effects of mixed infections of citrus viroids and viruses in symptom expression as well as to study the host effects in genetic diversity of two citrus viroids.

Nuria and Georgios have been in several different laboratories (Spain, England, Greece and USA), and would like to highlight some characteristics in terms of the way Prof. Semancik addressed his professional activities as a UC Riverside scientist and professor:

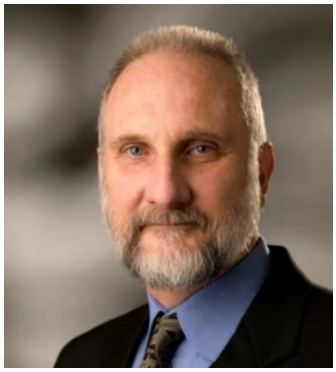
i) Unlike other professors that spend most of their time in their office, Prof. Semancik was always in the greenhouse and field inoculating plants and collecting data as well as in the laboratory pipetting and trying to understand and set up new techniques by himself;
ii) Unlike other professors, he offered his team the opportunity to undertake new challenges that they found inspiring or to pursue ideas of their own;
iii) Unlike other laboratories, the Semancik laboratory was a mixture of people with different training backgrounds and personalities. Interacting with such diverse team, sharing and cooperating in our research objectives but also getting to know people with quite distinct personality traits turned out to be a rather enriching experience, it was like creating an academic family.

Georgios recalls couple of moments that crystalize what is described in points i-iii above. I recall the moment when, while crawling under citrus dwarfing viroid inoculated trees expressing the peculiar “finger imprint” symptom, I observed that the position of the symptoms was always associated with the position of the irrigation sprinklers. Semancik responded “From now on I will call you Leonardo, as in Leonardo da Vinci the Renaissance man. You just broke the code. Now it makes sense why we see these symptoms only in this field and not in the furrow irrigated ones. This project is now yours. Finish it.” You can imagine what such attitude and encouragement can do to a young science student. This project became my first publication. My last project with J. S. Semancik was with citrus bark cracking viroid in 2004, the year of his retirement. After RNA extractions from a host range experiment, he called me to take a look at the sPAGE gel he had just developed. Nothing unusual, it looked like any other silver stained gel. The tone of his voice and his body language was that of a kid in front of his birthday cake: “Look he said, this band right there, this is what kept me going for 40 years. You and I are the first people in this world to see this RNA band from this host for this viroid.” A few days later after submitting that paper, he stood at the lab door and waved at me and said: “It is all yours. The great state of California allowed me to enjoy it for 40 year and now it belongs to the next generation. I am happy that you were my last student, you are now member of the family”. He never returned to the UC Riverside, “There are other things in life”, was his answer whenever I invited him for a visit.

Nuria believes that the major accomplishment of J. S. Semancik was probably having started a new era of research in citrus pathology. I feel lucky to have been in the right place at the right time and having seen first-hand how to deal with unexpected results: that was the performance of a set of RNAs that did not perform as expected. That meant that we had to convince J. S. Semancik that we did not make a mistake and got his help for further interpretation of the unexpected results.

J. S. Semancik is richly deserving of the IOCV Fellow honor. Because of his achievements and scientific contributions and his unique way of dealing with his team, his academic family, he deserves this honor.

Tim Gottwald



From: Bill Dawson and Jim Graham

We are nominating Tim Gottwald for consideration for the 2019 IOCV fellow. Dr. Gottwald established the foundation and had been the major contributor to the epidemiology of citrus diseases. In doing so, he has collaborated with many scientists from throughout the world and often had helped quantify pathogen spread in their countries.

Dr. Gottwald was born in California and received his B.S. degree from California State

University, Long Beach, and the Ph.D. degree from Oregon State University in 1980. He first took a position with the USDA ARS working on pecans in Byron, GA. After five years, he was relocated to the USDA ARS laboratory in Orlando, FL, to work on citrus. In 1985, he moved to Fort Pierce, FL, when the whole laboratory was relocated.

The major portion of his work has been with citrus canker, which has been outside of the purview of the IOCV. However, this work has created the foundation of management and regulation that has been pivotal to the citrus industry. His analysis of citrus bacterial spot as not causing canker settled a nasty controversy in Florida and earned the Lee M. Hutchins Award from the American Pathology Society him along with Jim Graham. His epidemiological analyses became the foundation of the canker eradication program in Florida and even introduced him to the judicial system.

However, his etiological and epidemiological work with graft transmittable disease of citrus is the foundation of spread of these diseases including Citrus tristeza virus (CTV), huanglongbing (HLB), citrus variegated chlorosis, and citrus sudden death. He examined the spread of CTV in several countries before and after the emergence of the brown citrus aphid. He found that existing sampling methods were inadequate and developed novel approaches that adequately predicted the incidence of infection at the individual plant level. These methods have been adapted by the California Tristeza Eradication program.

When HLB entered Florida, Dr. Gottwald already had experience understanding the epidemiology of this disease from analyses in other countries. He immediately began advising growers of the seriousness of this situation. Because of his warnings, he became known as “Dr. Death” among growers. Unfortunately, these growers are less cynical now. His epidemiological predictions for Florida have become fact.

With exotic disease continually invading the United States, Dr. Gottwald developed models based on the habitat of ethnic groups associated with countries with specific pathogens as an effective means of finding new invasions.

Recently, Dr. Gottwald’s interest has gone to the dogs. He has organized efforts to train dogs to detect HLB in symptomless trees. For HLB eradication, particularly in urban and suburban areas, detection and removal of infected trees is by far the most effective means of reducing crop loss. However, symptomless trees are an ideal way to spread the disease, but detection of infected symptomless trees is extraordinarily difficult. The olfactory ability of dogs appear to be the most sensitive detection of HLB.

IOCV donated Washington navel orange tree planted in Riverside, California

From: Robert Krueger and Georgios Vidalakis

The Mission Inn is a historic landmark in Riverside, California. Originally built in 1876 by Frank Miller, the Mission Inn began as a simple adobe structure. Between 1903 and 1931, the Mission inn expanded greatly and became the classical "Mission Revival" style complex that it is today. The architectural style incorporates themes from all 21 of the California missions, and contains furniture, art work, and religious relics from around the globe. In the early days, the Mission Inn was a landmark lodging that served as an attraction to visitors to the then remote and thinly populated California. It evolved into a destination stay for people from all over the world and serves as one of Riverside's best known landmarks.

A few years prior to the establishment of the Mission Inn, in 1873, three navel oranges trees arrived in Riverside after a rather circuitous journey from their origin in Bahía, Brazil, through Washington DC and then San Francisco. Although naveled oranges were not uncommon in Brazil, this was the first quality naveled orange to arrive in the United States. Because of the role of the recently formed United States Department of Agriculture (USDA) in obtaining the trees, it became known as the 'Washington' navel and because this original budline became the source of many selections, it became known as the 'Parent Washington'. The three original trees were planted on the property of Luther and Eliza Tibbets. One of the three trees was trampled by a cow. The surviving trees served as a source of propagative material that lead to the great expansion of the citrus industry in California, first in Riverside and later in other areas of the state. The 'Parent Washington' also traveled to other countries, where it and its selections became important cultivars in all citrus-producing areas with appropriate climates.

In 1902, one of the original trees was transplanted to a small memorial park at the intersection of Magnolia and Arlington Avenues, where it remains today as one of Riverside's best known landmarks. The other tree was transplanted by then President Theodore Roosevelt at the Mission Inn in 1903, where it remained until succumbing to Phytophthora in 1922. A section of the stump of this Mission Inn tree is preserved with a memorial plaque in (of all places) South Africa. The tree at Magnolia and Arlington is generally known as the 'Parent Washington' or 'Original Parent Washington', whereas

the tree once planted at the Mission Inn is known as the ‘Mission Inn’ tree.

In 1918, the Parent tree and the Mission Inn trees were propagated and incorporated into the genebank at the University of California Citrus Experiment Station (CES) as CRC 1241B and 1241A, respectively (also known as PI 539560 and 539559). The Parent tree at the CES was used to propagate a tree at the Citrus Clonal Protection Program (CCPP), which was evaluated for pathogens and found to have the citrus viroid IIa and citrus vein enation virus. These pathogens were eliminated by shoot-tip grafting in 1977 and became the CCPP VI 376 budsource. The clean source VI 376 budline source trees were planted at the CCPP Foundation Block located at the UC Lindcove Research and Extension Center in Tulare County in 1981.

Photo: Chet Roistacher

An additional ‘Washington’ navel was planted in the Spanish patio at the Mission Inn in 1915. This tree had no particular historical significance, but provided shade, a pleasant fragrance, and a few fruit for the enjoyment of Mission Inn visitors and staff. This tree was in some ways a tree out of place, being planted in a small container in the middle of a building, although open to the sunlight. For a number of years, this tree was personally cared for by Prof George Zentmyer of the Department of Plant Pathology at the CES. Prof Zentmyer was a world renowned authority on Phytophthora, the causal agent of avocado root rot, but also had an interest in citrus as well as many other crops. Prof Zentmyer would carry water in a watering can through the Mission Inn to water the tree. After Prof Zentmyer’s death in 2003, care for the patio tree was done by the Mission Inn staff. The tree started to decline several years later for unknown reasons, although possibly associated with the restricted root system.

After the patio tree’s death in 2016, the Mission Inn wished to replace it and turned to the CCPP staff, who had previously consulted on the tree decline. CCPP had propagated a ‘Washington’ navel from propagative materials from the clean source at Lindcove in 2010. This tree was presented to the Mission Inn during the 20th Conference of the International Organization of Citrus Virologists on March 12, 2019, and was planted in a ceremony on May 08, 2019, 116 years to the date that US President Roosevelt re-planted one of the two original navel orange trees in front of the Mission Inn, May 8, 1903. The May ceremony recognized all the historical associations mentioned in this article and was

attended by UC, City of Riverside, and Mission Inn associates. The City of Riverside presented IOCV with the attached certificate of recognition for its donation.

Photo: https://missioninnmuseum.org/learn/museum-collection/

Tree delivery lunch at the Mission inn

Photo Caption (left to right): Mr. Tony Maalouf, General Manager, The Mission Inn Hotel and Spa; Georgios Vidalakis, Ph.D., Director of the Citrus Clonal Protection Program, University of California, Riverside; and Kathryn Uhrich, Ph.D., Dean of College of Natural and Agricultural Sciences, University of California, Riverside participate in the official tree planting.

Photo Caption (left to right): Anne Seymour, Vice President of Riverside Convention and Visitors Bureau; Carolina Evangelo, Director of Communications of Citrus Research Board; Tamara Tollison, Communications Assistant Citrus Research Board; Carol Brown, Group Sales Manager The Mission Inn Hotel and Spa; Georgios Vidalakis, Ph.D., Director of the Citrus Clonal Protection Program, University of California, Riverside and Kathryn Uhrich, Ph.D., Dean of College of Natural and Agricultural Sciences, University of California, Riverside have all worked together to coordinate the historic re-planing of the George Zentmyer Tree.

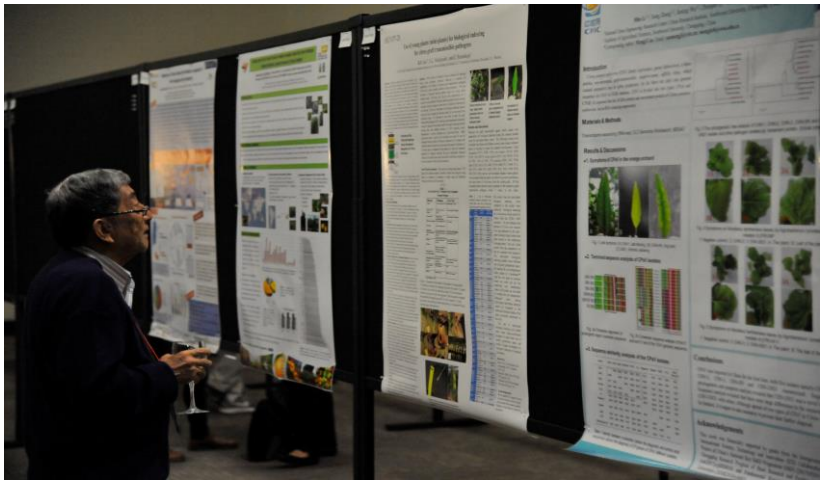
Certificate that was presented by the Mayor's office to the IOCV in recognition for the donation of the tree.

Family *Kitaviridae*: a tribute to Prof. Kitajima

From: Juliana Freitas-Astúa, Pedro Ramos-González, Mengji Cao, Changyong Zhou, Mike Melzer and Georgios Vidalakis

Prof. Elliot Kitajima has been an active member of IOCV for many years and was honored during the IOCV Conference held in Brazil in 2010 as a result of his extensive research on citrus pathogens. Perhaps not many people know this, but the first image of citrus tristeza virus (CTV) was obtained by Prof. Kitajima and published in a 1964 Nature manuscript. The same is true for citrus leprosis virus, as reported in a 1972 Virology paper. Moreover, many of the images that we learned to associate with a particular pathogen (like the beautiful *Xylella fastidiosa* micrograph published in Nature in 2000, when its complete genome was sequenced) were taken by Prof. Kitajima. After 60 years of an extremely productive career, 26 honors and awards (including Fellow of APS in 2001 and a new species of a phytophagous mite named *Tenuipalpus kitajimai* in 2018), 438 manuscripts published and dozens of students guided, Prof. Kitajima has just been honored by the International Committee on Taxonomy of Viruses (ICTV) through the creation of family *Kitaviridae*, which accommodates segmented ss(+) RNA viruses belonging to the genera *Higrevirus, Blunervirus* and *Cilevirus*. Particularly the cileviruses, whose type member is citrus leprosis virus C, have been intensively studied by Prof. Kitajima in the last decades. Not only was he involved in the original work that unequivocally proved the viral etiology of citrus leprosis, but also collaborated in studies that shed light on aspects of its biology, transmission, diagnosis, host and vector interaction, dissemination/ spread, and variability. IOCV is proud of having Prof. Kitajima as one of its members and congratulates him for receiving this well-deserved recognition.

Prof Kitajima and Juliana Freitas-Astúa were in a citrus orchard at Chongqing during 2016 IOCV Conference in China; Prof Kitajima gave a talk about family *Kitaviridae* at the University of Sao Paulo.



Prof Kitajima was at Poster Room of XXI IOCV

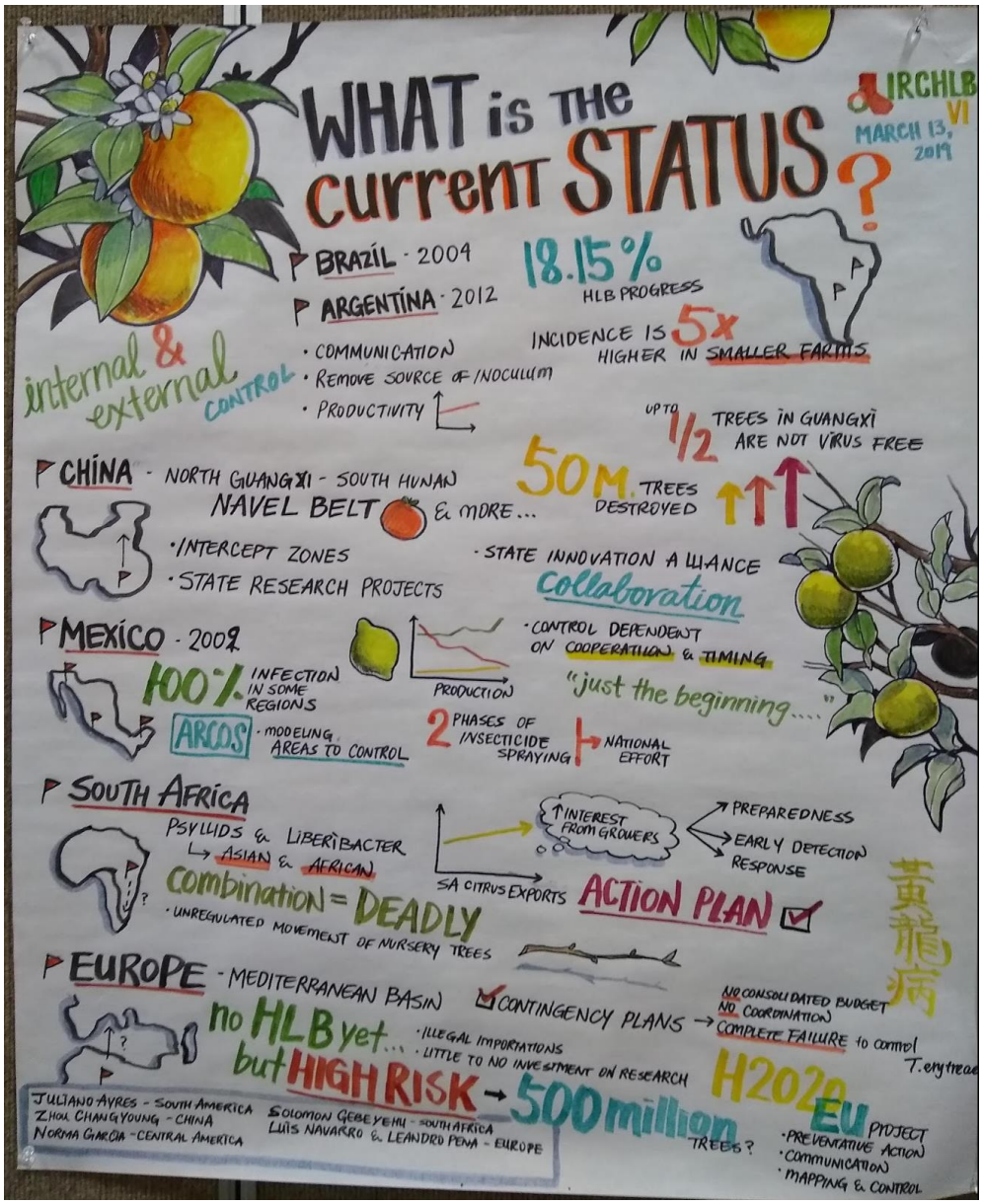
IRCHLB Report for IOCV Newsletter

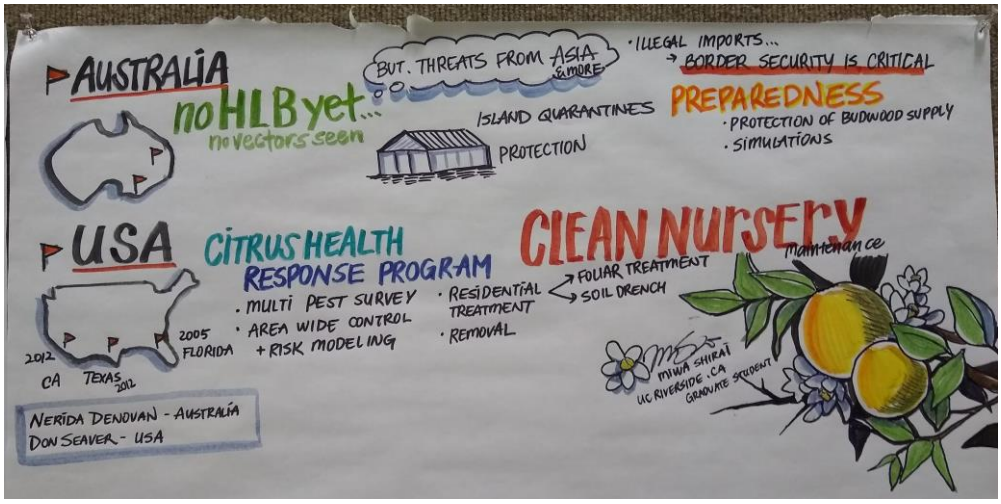
From James Graham:

For the first time, the IOCV met jointly with the International Research Conference on Huanglongbing (IRCHLB). IRCHLB IV convened immediately after the 21st IOCV at Riverside Convention Center. The IRCHLB IV hosted 566 delegates of which 194 attended the IOCV. IRCHLB delegates representing 23 countries delivered 84 oral and 175 poster presentations. IRCHLB VI featured panel discussions on the global status of HLB, current HLB research efforts and vision for sustainable HLB management practices. Oral technical sessions and poster sessions included pathogen genome analysis, cultural control, chemical, molecular and biological vector management, host resistance and tolerance, epidemiology and economics, pathogen detection and culturing, antimicrobials, and regulatory updates. Oral sessions ended with panel discussions featuring interactive participation by the audience.

The IOCV and IRCHLB awarded 22 scholarships that enabled young scientists to participate and deliver their research presentations at one or the other conference. Twenty-four national and international sponsors supported the conferences. The Mid-Conference Tour of the UC Citrus Variety Collection, Clonal Protection Program and USDA-ARS Germplasm Repository facilities was very popular with over 75 participants.

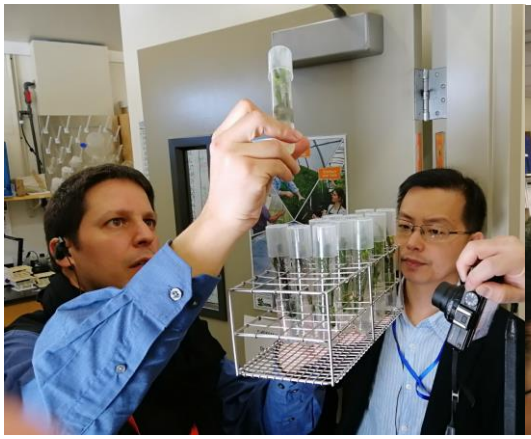
IRCHLB





Artist Painting

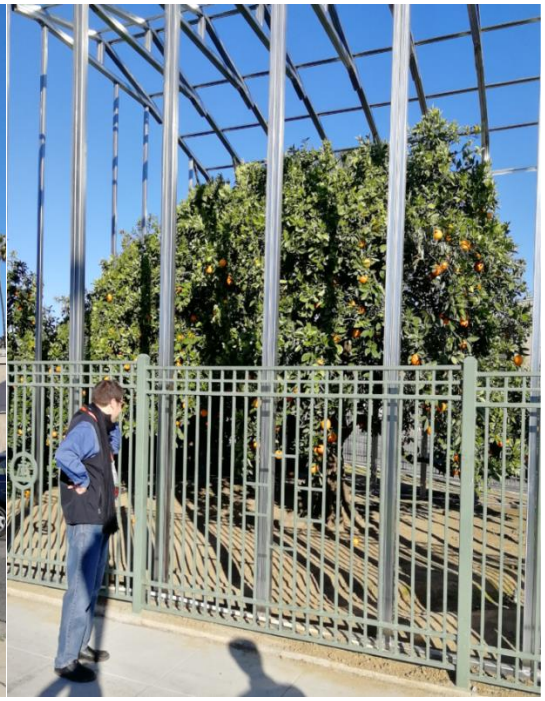
Post-conference Tour Photos



Citrus Clonal Protection Programme (CCPP)



Lindcove Research and Extension Center



Parent Washington Navel Orange Tree

CDFA Tamarixia Rearing Facility

Brokaw Nursery: Airstream Tunnels for citrus propagation

Limoneira Farming and Agromin Compost Operation

Citrus Stubborn and Beet leafhoppers collecting

Citrus dry rot

TreeSource Citrus Nursery

Central California Tristeza Eradication Agency (CCTEA)

THE JOURNAL OF CITRUS PATHOLOGY

https://escholarship.org/uc/iocv_journalcitruspathology

FOR IOCV MEMBERSHIP

The website:

http://journalofcitruspathology.com/iocv_membership.html

Where members can pay online.

IOCV Membership Form (next page)

Membership Application in the

INTERNATIONAL ORGANIZATION OF CITRUS VIROLOGISTS

The International Organization of Citrus Virologists (IOCV) is an independent, non-profit association for the promotion of excellence and advancement of research with virus and virus-like diseases of citrus. In addition, membership is open to anyone who is interested in the exchange of information on diseases of citrus in general (see also *Journal of Citrus Pathology*).

A membership fee of $60.00 US, payable to IOCV is required for a three-year period between IOCV Conferences. Student fee is $30.00. Optional donations to the Schwartz Award for the support of young scientists participation to the IOCV Conferences are encouraged and welcomed.

PLEASE TYPE OR PRINT CLEARLY

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Payments can be made by **PayPal** or **Credit Card**.

Other options for payment are by Bank Transfer (information below) or International money order or International draft payable to: *INTERNATIONAL ORGANIZATION OF CITRUS VIROLOGISTS*

Payments by checks ONLY on US banks.
Cash payments in USD will be accepted directly but should not be mailed.

If you have any questions contact Robert Krueger, Treasurer, IOCV (Robert.Krueger@ucr.edu) with a copy to the IOCV Secretary (iocvsecretary@gmail.com).

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Account number: 24607-00971
Swift code: BofA US 3N

Bank address: Bank of America
5225 Canyon Crest Dr. #83
Riverside, CA 92507
USA

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