



APACE Newsletter

Asia-Pacific Association of Chemical Ecologists

June 20, 2014

Volume 2, Issue 1

Special topics of interest:

- Past, present and future conferences
- New APACE Councilors elected
- Members' News and Achievement awards

Message from the Present President

Dear APACE members and friends,

Welcome to the second issue of our regular APACE newsletter. We received very positive responses from many APACE members and Councilors after our first issue had been published in November 2013. Thank you very much to Dr. Jerry Zhu for very professional design of the APACE newsletter templates that we will continue to use in our future issues. The main goal of our newsletter was to establish a forum for communication between APACE members and friends, to provide an open platform for future collaborations and increase awareness about Chemical Ecology research in Asia-Pacific countries. Thank you very much to our APACE Councilors who were very active in providing such information. In this issue you will find more detailed information about our current APACE Councilors, their affiliations and areas of expertise and interests. Please, do not hesitate to contact the APACE Councilor in your country and communicate relevant Chemical Ecology issues and information to them, if you would like to contribute to our newsletter. The role of APACE Councilors is not only to act as advisors to the Executive Committee in formulating policies, but also to represent their regions, members and various fields of Chemical Ecology.

This issue will provide more information about our coming 8th APACE conference that will be hosted and organized by Dr. Jerry Zhu in September 2015 in California, USA. We also placed information about recent and future conferences and events related to Chemical Ecology. The International Society of Chemical Ecologists (ISCE) will hold the 30th anniversary conference in July 2014 and at the same time celebrate the 40th anniversary of the Journal of Chemical Ecology. Both our societies (APACE and ISCE) are affiliated with the Journal of Chemical Ecology and members are encouraged to submit manuscripts to our Journal.

Our APACE members may have noticed substantial improvements to the APACE webpage. Thank you very much to our webmaster Prof. Fengming Yan (APACE Councilor from China) for the great job done to redesign and update our webpage at www.apace97.org. We will continue to regularly update and improve our APACE webpage.

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Thank you very much for your attention. Please, enjoy reading of our newsletter and do not hesitate to submit your comments and information for the next issue of APACE newsletter.

Sincerely yours,

Alex IL'ICHEV





ASIA-PACIFIC ASSOCIATION OF CHEMICAL ECOLOGISTS (APACE)

Present and Future Conferences

◇ The 30th annual meeting of International Society of Chemical Ecology will be held in Champaign-Urbana, IL, USA from July 8-12, 2014 and hosted by Conference Chair Prof. May Berenbaum. This marks the 30th anniversary of the first ISCE meeting (as well as the 40th anniversary of the founding of the Journal of Chemical Ecology). The ISCE conference will be conducted jointly with Chemical Signals in Vertebrates (CSiV), providing a great opportunity for symposia that cover Chemical Ecology of vertebrates and invertebrates.

For more information visit: <http://www.chemecol.org/>



◇ The 8th Conference of the APACE will be held in Orange County (Heart of the Disney Land), California, USA from September 23-26, 2015 and hosted by Conference Chair Jerry Zhu. More detailed information will soon be released with the 1st announcement (late summer of 2014).



◇ The 10th Conference of The Chinese Association of Chemical Ecology will be held in Nan Chang, the capital of Jiangxi Province of P.R.China from October 24-26, 2014. Topics include: Chemical ecology of pests, Chemical ecology of invasive species, Plant-microbe interactions and plant allelopathy, Mechanisms of orientation to odors, Semiochemical research technology and methodology, Applications of sensory electrophysiology and Molecular chemical ecology.

Academic Organizers: John Hildebrand (University of Arizona),

Yongping Huang (Shanghai Institute of Plant Physiology and Ecology, CAS).

Local Organizers: Lusheng Huang (Chair),

Hongyi Wei (executive Chair) ,Jiangxi Agriculture University

Email: h1wei@163.com (Hongyi Wei)



ASIA-PACIFIC ASSOCIATION OF CHEMICAL ECOLOGISTS (APACE)

Future Conferences



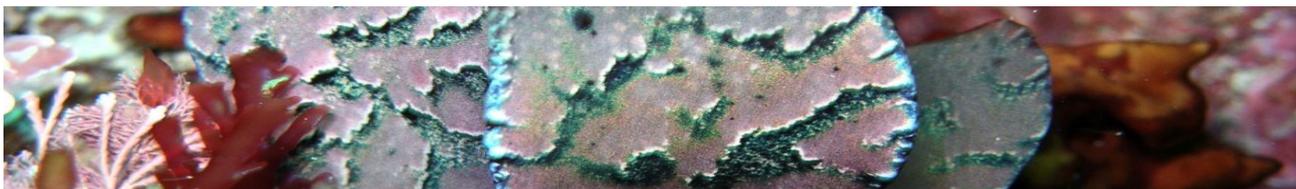
ICP2014 Nagoya

*XXVIIth International Conference on Polyphenols
2-6 September 2014*

*jointly hosted:
The 8th Tannin Conference*

◇ The 27th International Conference on Polyphenols & 8th Tannin Conference will take place on September 2-6, 2014 in Nagoya, Japan. Poster abstracts and early registration are open until May 31, 2014 at the conference web site <http://icp2014.org/>. The conference program includes sessions on polyphenols in ecosystems and the environment with plenary lectures by Prof. Gloria Munday (USA) and Prof. Liageng Li (China). The Tannin Conference includes talks on the chemistry and bioactivities of the polyphenols known as tannins including their roles in ecosystems and the environment.

Past Conferences



◇ The 10th International Temperate Reef Symposium - the world's premier conference on the ecology of rocky reefs – was held from 12-17 January 2014 in Perth, Western Australia. The conference hosted special sessions in Global Change Biology and Ecology, Environmental and Biological Drivers of Ecological Function, Thresholds of Change, Human Impacts, General Temperate Reef Science, and Ecology in the 21st Century. Please refer to <http://10itrs.org/program/> for more details.

New APACE Councilors (2013-2017)

* **Myron P Zalucki** (Australia), Professor of Entomology at University of Queensland, Australia. Email: M.Zalucki@uq.edu.au

<http://www.biology.uq.edu.au/staff/myron-zalucki>

* **Baoyu Han** (China), Professor, Associate Dean of College of Life Science, China Jiliang University, Hangzhou, P.R. China. Email: han-insect@263.net

* **Rikiya Sasaki** (Japan), Research Team Leader at Ecomone Division of Fuji Flavor Co. Ltd., Tokyo, Japan Email: rikiya.sasaki@fjf.co.jp, rikiya.sasaki@it.com

* **Naoki Mori** (Japan). mori.naoki.8a@kyoto-u.ac.jp Associate Professor, Applied of Life Sciences, Graduate School of Agriculture, Kyoto University, Japan Email: mori.naoki.8a@kyoto-u.ac.jp <http://www.chemeco.kais.kyoto-u.ac.jp>

* **Michael Rostas** (NZ), Senior Lecturer at Lincoln University, Christchurch, NZ.

Email: Michael.Rostas@lincoln.ac.nz,

<http://bioprotection.org.nz/users/michael-rostas>

* **Agenor Mafra-Neto** (USA) President and CEO of ISCA Technologies.

Email: agenorl@iscatech.com, isca@iscatech.com

<http://www.iscatech.com/>; www.en.wikipedia.org/wiki/Agenor_Mafra-Neto



ASIA-PACIFIC ASSOCIATION OF CHEMICAL ECOLOGISTS (APACE)

APACE Executive Officers (2013-2015)

8th APACE President

Dr. Alex IL'ichev

Department of Environment and Primary Industries

Victoria, Australia. Email: alex.ilichev@depi.vic.gov.au

www.dpi.vic.gov.au

Vice President and President-Elect (2015-2017)

Dr. Junwei (Jerry) Zhu

Lincoln, Nebraska, USA. Email: mstrszhu@gmail.com

APACE Secretary

Dr. Guirong Wang

Chinese Academy of Agricultural Sciences

Beijing, China. Email: grwang2010@hotmail.com

www.ippcaas.cn/Html/2010_05_07/2585_8997_2010_07_9541.html

APACE Treasurer

Dr. Junji Takabayashi

Center for Ecological Research, Kyoto University

Kyoto, Japan. Email: junji@ecology.kyoto-u.ac.jp

www.ecology.kyoto-u.ac.jp/ecology/member/takabayashi.html

APACE Councilors (2011-2015)

Fengming Yan (China) : fmyanfm@gmail.com, fmyan@pku.edu.cn

Tilmann Harder (Australia) : t.harder@unsw.edu.au

Aijun Zhang (USA) : Aijun.Zhang@ars.usda.gov

Qing-He Zhang (USA) : qing-he@rescue.com

Suk-Ling Wee (Malaysia) : slwee@ukm.edu.my

Jung Jin Kyo (Korea) : jungjk@korea.kr

Yonggen Lou (China) : yglou@zju.edu.cn

Yukio Ishikawa (Japan) : ayucky@mail.ecc.u-tokyo.ac.jp

K.R.M. Bhanu (India) : bhanu.krm@gmail.com, bhanu.krm@pcil.in

To show your support to APACE, renew your membership or join us today by visiting www.apace97.org/members

You are here: [Home](#) • [Members](#)

Members

Any person, interested in promoting the objectives of the APACE, may apply to the APACE Membership Dept for any one of the three membership types:

Please return the form to the APACE Membership Dept (USDA-ARS-NPA, Agroecosystem Management Research Unit, 305B, Entomology Hall, UNL-East Campus, Lincoln, NE 68583, U.S.A. Tel. 402-472-7525; Jerry.Zhu@ars.usda.gov; Fax: 402-437-5260; Cell: 402-613-1957) with a membership fee of US\$10 (regular member) or US\$5 (student member) for every two years. (insert description). You can pay the membership fee online via Paypal (see right).

- [Download Application Form for an APACE Membership](#)
- [Download Instruction for MembershipRenewal](#)

Membership fees

Pay Now:

(U.S. Dollar)

Pay



Regular membership:US\$10
Emeritus members:US\$5
Student membership:US\$5



ASIA-PACIFIC ASSOCIATION OF CHEMICAL ECOLOGISTS (APACE)

Members' News

APACE scientist awarded national honour (by Alvin KW Hee).



“Unravelling one of nature’s mysterious phenomenon: A strong dose of persistence, cooperation and persistence! “ The unique and very strong attraction by certain male tephritid insects such as the Oriental fruit flies to methyl eugenol was first documented over 100 years ago. Despite the well-known fact that this compound has been successfully used in male fruit fly control programmes since the late 1940s, scientists continued to be baffled by this phenomenon. In the late eighties, it took a friendship between an entomologist, **Dr Keng-Hong Tan** from Malaysia and a chemist, **Dr Ritsuo Nishida** from Japan to finally unravel this mystery (see picture left). Together they continue to discover and identify the actual chemical components that attract those insects to floral fragrances and new fruit fly male attractants. Dr Tan is internationally renowned for his work in chemical ecology particularly for aspects related to the co-evolution between fruit flies and wild fruit fly orchids, as well as sex pheromones of fruit flies in chemotaxonomy. Although he retired as a professor of entomology in 2000, he is still active as a practicing entomologist. Of concern to him was the impediment of fair international fruit trade on poorer countries especially those affected by the scourge of pest fruit flies. He has been passionate in efforts to resolve the cryptic species complexes of tephritid pests (including the Oriental fruit flies) to overcome constraints in sterile insect technique (SIT) and international trade. His efforts were rewarded when he was instrumental in

proving that four officially recognized *Bactrocera* species are actually one same biological species. In recognition of his significant contributions, he was recently elected to the Academy of Sciences Malaysia, the first for a fruit fly chemical ecologist. To honour his prestigious appointment, a regional fruit fly symposium was organized in November 2013 by former student and colleague, **Dr Alvin Hee** at Universiti Putra Malaysia, that saw the participation of fruit fly colleagues from the USA, Australia, China, Thailand, the Philippines, Indonesia and Malaysia. The symposium culminated with Dr Tan’s public lecture on “The Fruit Fly-Orchid Association: Sex Pheromones, Allomonones and Synomonones in Pollination and Biodiversity” (see picture right).



“Lure and kill” formulations.

Research at Queensland University of Technology has made a major step towards understanding how Australia’s most damaging horticultural pest, the Queensland fruit fly (*Bactrocera tryoni*) finds its host plant. Fruit flies use host odours to locate fruits onto which they lay their eggs, but so far an effective odour lure that will efficiently attract female flies remains elusive. By focusing on the stages of fruit that mated females find most attractive, and analyzing the volatile emissions of these fruits, **Dr Paul Cunningham** (at QUT) has uncovered a subset of volatiles that strongly determine female attraction. Field cage trials revealed that a blend of three volatiles was significantly more attractive than natural fruit juices, or synthetic odour blends without these volatiles. Field trials using lure-baited traps in fruit orchards have now begun. With the recent withdrawal of the two main pesticides used to control fruit flies, such ‘lure and kill’ formulations may play an essential role in managing this devastating pest. Contact John Paul Cunningham <paul.cunningham@qut.edu.au> or Project leader Anthony Clarke <a.clarke@qut.edu.au> for more information.

New parasitoids released for biological control (the Department of Environment and Primary Industries, Australia).

Scientists from Biosciences Research Division DEPI have just released the introduced parasitoid wasp, *Mastrus ridens* for trial in the field. This parasitoid species has been introduced to Australia in a collaboration with NZ colleagues in the IPDM subproject of the national apple and pear project PIPS: Productivity, Irrigation, Pests, and Soils. The next stage of the work in Australia will be to determine how many and in what spatial distribution parasitoids need to be released to obtain optimal establishment across all pome fruit growing regions in which codling moth is an issue. In the meantime, **David Williams** (former APACE Councilor from Australia) and **Alex Il'ichev** have completed the first season of field trials investigating synergistic effects of host plant volatiles and pheromones for improving capture of codling moth females in orchards under mating disruption. They have a bit of number crunching to do but it appears that there are several combinations that will be worth investigating further during next fruit season. The second year of the project assessing mating disruption for control of carob moth in almonds is also under way.





Members' News

Chemical ecology of plant defences

In response to insect attack and mechanical wounding, plants activate the expression of genes involved in various defence related processes. A fascinating feature of these inducible defences is their occurrence both locally at the wounding site and systemically in undamaged leaves throughout the plant. Wound-inducible proteinase inhibitors (PIs) in tomato (*Solanum lycopersicum*) provide an attractive model to understand the signal transduction events leading from localized injury to the systemic expression of defence-related genes. Among the identified intercellular molecules in regulating systemic wound response of tomato are the peptide signal systemin and the oxylipin signal jasmonic acid (JA). The systemin/JA signalling pathway provides a unique opportunity to investigate, in a single experimental system, the mechanism by which peptide and oxylipin signals interact to coordinate plant systemic immunity. **Dr. Li and his team** describe the characterization of the tomato suppressor of prosystemin-mediated responses8 (*spr8*) mutant, which was isolated as a suppressor of (pro)systemin-mediated signalling. *spr8* plants exhibit a series of JA-dependent immune deficiencies, including the inability to express wound-responsive genes, abnormal development of glandular trichomes, and severely compromised resistance to cotton bollworm (*Helicoverpa armigera*) and *Botrytis cinerea*. Map-based cloning studies demonstrate that the *spr8* mutant phenotype results from a point mutation in the catalytic domain of TomLoxD, a chloroplast-localized lipoxygenase involved in JA biosynthesis. Authors present evidence that overexpression of TomLoxD leads to elevated wound-induced JA biosynthesis, increased expression of wound-responsive genes and, therefore, enhanced resistance to insect herbivory attack and necrotrophic pathogen infection. These results indicate that TomLoxD is involved in wound-induced JA biosynthesis and highlight the application potential of this gene for crop protection against insects and pathogens. The paper co-authored by Dr. Jianing Wei is published in "PLoS Genetics" 20139, e1003964.

Trichome-based tomato resistance as an environmentally friendly insect-pest management strategy

Trichome-based tomato resistance has long been suggested as an environmentally friendly insect-pest management strategy. However, the effect of this direct plant defence trait on the efficacy of indirect defence, such as herbivore-induced plant volatiles (HIPVs), remains largely unexplored. **Dr. Jianing Wei** et al. used tomato genotypes deficient in the jasmonic acid (JA) pathway to study the interaction between the production of herbivore-induced plant volatiles (HIPVs) that serves as information cues for herbivores as well as natural enemies of herbivores, and the production of foliar trichomes as defence barriers. Jasmonic acid-insensitive1 (*jai1*) mutant plants with both reduced HIPVs and trichome production received higher oviposition of adult leafminers, which were more likely to be parasitized by the leafminer parasitoids than JA biosynthesis *spr2* mutant plants deficient in HIPVs but not trichomes. The preference and acceptance of leafminers and parasitoids to trichome-removed plants from either *spr2* or wild-type (WT) genotypes over trichome-intact genotypes can be ascribed to the reduced trichomes on treated plants, but not to altered direct and indirect defence traits such as JA, proteinase inhibitor (PI)-II, and HIPVs levels. Although the HIPVs of WT plants were more attractive to adult insects, the insects preferred trichome-free *jai1* plants for oviposition and also had greater reproductive success on these plants. These results provide strong evidence that antagonism between HIPV emission and trichome production affects tritrophic interactions. This work has been published in "Plant Cell & Environment" 2013, 36(1): 315-327.

Chemical signals synchronize the life cycles of a plant-parasitic nematode and its vector beetle

The pinewood nematode *Bursaphelenchus xylophilus* has caused severe damage to pine forests in large parts of the world. Dispersal of this plant-parasitic nematode occurs when the nematode develops into the dispersal fourth larval stage (LIV) upon encountering its insect vector, the Monochamus pine sawyer beetle, inside an infected pine tree. **Sun and his team** show that LIV formation in *B. xylophilus* is induced by C16 and C18 fatty acid ethyl esters (FAEEs), which are produced abundantly on the body surface of the vector beetle specifically during the late development pupal, emerging adult, and newly eclosed adult stages. The LIV can then enter the tracheal system of the adult beetle for dispersal to a new pine tree. Treatment of *B. xylophilus* with long-chain FAEEs, or the PI3 kinase inhibitor LY294002, promotes LIV formation, while D7-dafachronic acid blocks the effects of these chemicals, suggesting a conserved role for the insulin/IGF-I and DAF-12 pathways in LIV formation. Their work provides a mechanism by which LIV formation in *B. xylophilus* is specifically coordinated with the life cycle of its vector beetle. Knowledge of the chemical signals that control the LIV developmental decision could be used to interfere with the dispersal of this plant-parasitic nematode. This work has been published in "Current Biology" 2013, 23: 2038-2043.





ASIA-PACIFIC ASSOCIATION OF CHEMICAL ECOLOGISTS (APACE)

Members' News

A native fungal symbionts facilitate the prevalence and development of an invasive pathogen-native vector symbiosis

Invasive pathogen–insect symbioses have been extensively studied in many different ecological niches. Whether the damage of symbioses in different introduced regions might be influenced by other microorganisms has, however, received little attention. Eight years of field data by **Sun and his team** showed that the varied levels of the nematode and beetle populations and infested trees of the invasive *Bursaphelenchus xylophilus*–*Monochamus alternatus* symbiosis were correlated with patterns in the isolation frequencies of ophiostomatoid fungi at six sites, while the laboratory experiments showed that the nematode produced greater numbers of offspring with a female-biased sex ratio and developed faster in the presence of one native symbiotic ophiostomatoid fungus, *Sporothrix* sp. I. Diacetone alcohol (DAA) from xylem inoculated with *Sporothrix* sp. I induced *B. xylophilus* to produce greater numbers of offspring. Its presence also significantly increased the growth and survival rate of *M. alternatus*, and possibly explains the prevalence of the nematode–vector symbiosis when *Sporothrix* sp. I was dominant in the fungal communities. Studying the means by which multispecies interactions contributed to biogeographical dynamics allowed us to better understand the varied levels of damage caused by biological invasion across the invaded range. This work has been published in “Ecology” 2013, 94: 2817-2826



Employment Opportunities

ASSOCIATE RESEARCH ENTOMOLOGIST/CHEMICAL ECOLOGIST

Job description: A full time Assistant/Associate Research Entomologist or Chemical Ecologist position is available in the R & D Department of Sterling International, Inc. This position is focused on, but not limited to, various lab and field bioassays, dispenser technology and trap development. Qualifications: Candidate must have a M.Sc. degree in entomology, chemical ecology or biology, with strong background and experience in semiochemical-related bioassays. Preference will be given to US citizens or permanent residents. Salary: Commensurate with experience.

Application: To apply, submit resume along with college transcripts to: **Dr. Qing-He Zhang**, Sterling International, Inc. 3808 N. Sullivan Rd, Bldg 16P, Spokane, WA 99216, USA; Phone: 509-343-3531; Email: qing-he@rescue.com. Please also include the names, email addresses and phone numbers of two references. Starting date: as soon as possible. Sterling International, Inc. is one of the world's leading semiochemical-based companies, manufacturing the RESCUE!® attractants and traps for flies, yellow jackets, paper wasps, hornets, stink bugs, Japanese and Oriental beetles, and lures for beneficial insects. For more information about the company, please visit our website: www.rescue.com. Sterling International, Inc., is an Affirmative Action Employer, and does not discriminate on the basis of race, ethnicity, religion, gender, national origin, disability, etc.

POSTDOCTORAL FELLOWSHIPS

1. [Pheromone identification of termite reproductives with a view to controlling urban pests](#)
2. [Chemistry and Entomology, two positions at Dr. Paulo Zarbin's lab \(Brazil\)](#)
3. [Three positions at Swedish University of Agricultural Sciences \(Sweden\)](#)