Program overview

August 23 (Wed.)

12:00-18:00	Registration	
10:30-12:00	APACE Executive officer and councilor meeting	Room: 201
12:00-13:30	ISCE Executive meeting	Room: 201
13:30-17:15	Symposium to Celebrate the 90th Birthday of Prof. Jerrold Meinwald	Room: B201
17:30-19:30	Welcome Reception	Room: 1F Lounge

August 24 (Thu.)

8:00-	Registration	
9:00-9:20	Opening Ceremony	Room: B201
9:20-10:10	*ISCE Silver Medal Award* Bark beetle pheromone and insect hydrocarbon production **Gary J. Blomquist**	Room: B201
10:10-10:30	Coffee Break	
10:30-11:20	*APACE Lifetime Achievement Award* Collaborative chemical ecology of Asian pest fruit flies - Semiochemical perspectives **Ritsuo Nishida** Collaborative chemical ecology of Asian pest fruit flies - Biological and socio-economic perspectives **Keng Hong Tan**	Room: B201
11:20-12:10	*ISCE Silverstein-Simeone Lecture Award* Perfume as dark matter: Unveiling the explanatory power of floral scent **Robert A. Raguso**	Room: B201
12:10-13:20	Lunch (Poster viewing)	
13:20-13:50	*ISCE Early Career Award* How plant viruses use chemistry to manipulate hosts and vectors **Kerry Mauck**	Room: B201

Underlined presenter's names represent student presentations.

Session	Session 1 Plant-animal interactions	Session 2 Characterization of semiochemicals: analysis and synthesis	Session 3 Microbial chemical ecology
Room	B101	B102	B103
Organizer	**Gary W. Felton** (Pennsylvania State Univ., USA) **Kotaro Konno** (National Agriculture and Food Research Organization, Japan)	**Paulo H. G. Zarbin** (Federal Univ. of Parana, Brazil) **Jun Tabata** (National Agriculture and Food Research Organization, Japan)	**Paolina Garbeva** (The Netherlands Institute of Ecology, the Netherlands) **Ikuro Abe** (Univ. of Tokyo, Japan)
13:50-14:20	*Keynote lecture* Microbes mediate plant perception of herbivores **Gary W. Felton**	*Keynote lecture* Recent results in pheromone synthesis **Kenji Mori**	*Keynote lecture* The chemical ecology of plant-animal-microorganism interactions **Robert R. Junker**
14:20-14:35	*Keynote lecture* Miracle maize is toxic to three different herbivore feeding guilds **Dawn S. Luthe**	GC/FT-IR analysis of a novel 2,4,6,9-tetraene occurring in a female pheromone gland of *Parasemia plantaginis* (Lepidoptera: Arctiidae) **Testu Ando**	*Keynote lecture* Activated chemical defense of Japanese marine sponge *Discodermia calyx* **Toshiyuki Wakimoto**
14:35-14:50		Cytochrome P450s are involved in iridoid biosynthesis in leaf beetles **Nanxia Fu**	
14:50-15:05	*Keynote lecture* Why are terrestrial ecosystems green? Why are anti-nutritive and inducible defenses effective?: A novel parameterized food web model and its	Elucidating the biosynthesis of the aphid sex pheromone **Suzanne J. Partridge**	*Keynote lecture* Volatile affairs in microbial belowground interactions **Paolina Garbeva**

15:05-15:20	implications to chemical ecology and plant-herbivore interactions **Kotaro Konno**	Anti-aphrodisiac pheromones of *Heliconius erato phyllis* and *Heliconius ethilla narcaea* (Nymphalidae, Heliconiinae) **Paulo H. G. Zarbin**	
15:20-15:40	Coffee Break		
15:40-15:55	Mechanisms underlying cardenolide sequestration in a highly adapted herbivorous insect **Fee L. E. M. Meinzer**	*Keynote lecture* An explosion of diversity in cerambycid beetle pheromones: Identifications and syntheses **Jocelyn G. Millar**	Comparison of secondary metabolic gene evolution in microorganisms from different extreme environments **Dana Ulanova**
15:55-16:10	Dynamics and origin of cytokinins involved in plant manipulation by a leaf-mining insect **David Giron**		Roles of the DSF-family quorum sensing signals in cell-cell communication **Yinyue Deng**
16:10-16:25	Indirect manipulation of plant induced defenses by parasitoids of caterpillars **Ching-Wen Tan**	Host plant affects the sexual attractiveness of the female white-spotted longicorn beetle, *Anoplophora malasiaca* **Nao Fujiwara-Tsujii**	Post-translationally modified quorum sensing pheromone from *Bacillus subtilis* subsp. *natto* **Masahiro Okada**
16:25-16:40	Honeybees modulate dance communication in response to nectar toxicity and demand **Ken Tan**	A shift in the paradigm of arthropod cuticular lipids: Isolation, structural elucidation, and asymmetric synthesis of an unusual tetraterpenoid hydrocarbon from the springtail *Hypogastrura viatica* (Hexapoda: Collembola) **Jan E. Bello**	Terpenes as *lingua franca* between fungi and bacteria **Ruth L. Schmidt**
16:40-16:55	Being punctual: The coordination of a plant-pollinator interaction by the circadian clock **Myles Fenske**	Identification of the aggregation pheromone of the American cockroach **Yukihiro Nishimura**	
16:55-18:55	Poster Session 1		Venue: 2F

August 25 (Fri.)

8:30-	Registration	
9:00-9:40	*Plenary 1* Chemical ecology from calling females to talking plants **James H. Tumlinson**	Room: B201
9:40-10:20	*Plenary 2* Factors controlling the composition of the microbiome of the agricultural pest *Spodoptera littoralis* **Wilhelm Boland**	Room: B201
10:20-10:40	Coffee Break	
10:40-11:20	*Plenary 3* Molecular phenology: '*in natura*' analyses of gene functions **Hiroshi Kudoh**	Room: B201
11:20-12:00	*Plenary 4* Chemical ecology in China in the last decade **Yongping Huang**	Room: B201
12:00-13:20	Lunch (Poster viewing)	

Session	Session 4 Plant perception and response	Session 5 Pheromone communication	Session 6 Aquatic chemical ecology
Room	B101	B102	B103
Organizer	**Consuelo De Moraes** (ETH Zürich, Switzerland) **Naoki Mori** (Kyoto Univ., Japan)	**Hidefumi Mitsuno** (Univ. of Tokyo, Japan) **Takeshi Sakurai** (Univ. of Tokyo, Japan) **Takeshi Fujii** (TUAT, Japan) **Zsolt Kárpáti** (Hungarian Academy of Sciences, Hungary)	**Michiya Kamio** (Tokyo Univ. of Marine Science and Technology, Japan) **Kye Chung Park** (The New Zealand Institute for Plant & Food Research Limited, New Zealand)
13:20-13:50	*Keynote lecture* Priming of plant defenses by an insect pheromone **Mark Mescher**	*Keynote lecture* Modes and mechanisms of evolution of insect olfaction **Teun Dekker**	*Keynote lecture* Cracking the code: Understanding the qualitative and quantitative properties of waterborne chemical cues that control prey risk assessment **Marc Weissburg**
13:50-14:05	Chemical cues from beneficial entomopathogenic nematodes enhance plant protection against herbivores **Anjel Helms**	Two hundred million years and four types of pheromones: A phylogenetic perspective on moth pheromone diversity and evolution **Christer Löfstedt**	*Keynote lecture* Chemical defense of sea hares: Sequestration and secretion of algal metabolite in ink and skin **Michiya Kamio**
14:05-14:20	Selective adaptation within the chemosensory system of the leaf beetle, *Chrysomela lapponica*, following host plant shift **Antje Burse**	Candidate cells producing alkenyl sex pheromones in moths **Takeshi Fujii**	
14:20-14:35	Natural variation of phytoalexin sakuranetin production in rice cultivars **Atsushi Ishihara**	Age-dependent plasticity in the sexual signal of a noctuid moth **Rik Lievers**	*Keynote lecture* Extracellular recordings from the brain cells of the New Zealand paddle crab, *Ovalipes catharus*, and evaluation of olfactory-active compounds

14:35-14:50	Effect of warming on VOC-mediated plant-insect interactions in high attitude alpine meadow ecosystems of the Himalayas **Joyshree Chanam**	Does divergent selection predict sexual selection in the adaptive radiation of the tropical butterfly genus *Melinaea*? **Melanie McClure**	**Kye Chung Park**
14:50-15:10	Coffee Break		
15:10-15:25	*Keynote lecture* Ligands seeking receptors: A multipronged approach in legumes to discover how plants perceive herbivore attack **Eric Schmelz**	How pheromone binding proteins sustain sexual behavior initiation in *Bombyx mori*? **Qun Liu**	A coral control acquisition of *Symbiodinium* using lectins **Mitsuru Jimbo**
15:25-15:40		In vivo functional analysis of genes involved in sex pheromone detection in the silkmoth *Bombyx mori* **Takeshi Sakurai**	Chemoreception of crabs and the development of baits for trap fishing and eradication **Miguel Vazquez-Archdale**
15:40-15:55	Induced foliar volatile production in response to the herbivore elicitor *N*-linolenoyl L-glutamine maps to a single QTL in maize **Alisa Huffaker**	Molecular basis of alarm pheromone detection in aphids **Guirong Wang**	Some like it cold: Antarctic marine chemical ecology **Conxita Avila**
15:55-16:10	The leucine-rich repeat receptor-like kinase OsLRR-RLK1 in rice functions as an early regulator in plant-herbivore interactions **Yonggen Lou**	Insect odorant receptor-based biosensor -a proof of concept using pheromone receptors and its application to general odor sensing- **Hidefumi Mitsuno**	Investigating the chemical landscape of microalgae cultures to mitigate pond crashes **Carolyn L. Fisher**
16:10-16:25	Volatiles from the giant knotweed, *Fallopia sachalinensis*, induced by the Japanese beetle, *Popillia japonica*, attract conspecific females **Koji Noge**	Odor detection using an insect olfactory receptor reconstructed in bilayer lipid membrane **Nobuo Misawa**	
16:25-17:05	*APACE Young Scientist Award Lecture* Sex pheromone communication system of Japanese hawk moths **Takuya Uehara**		Room: B201

	Flavone exposure improves the insecticide resistance and fecundity of *Spodoptera litura* through different cytochrome P450 monooxygenases **Kai Lu**	
17:05-19:05	Poster Session 2	Venue: 2F
19:05-19:35	ISCE/APACE Business Meeting	Room: B201

August 26 (Sat.)

8:30-	Registration		
Session	Session 7 Multitrophic interactions	Session 8 Semiochemicals in social interactions	Session 9 Chemical ecology of forest ecosystem
Room	B101	B102	B103
Organizer	**Ted Turlings** (Univ. of Neuchâtel, Switzerland) **Junji Takabayashi** (Kyoto Univ., Japan) **Yooichi Kainoh** (Univ. of Tsukuba, Japan)	**Toshiharu Akino** (Kyoto Institute of Technology, Japan) **Patrizia d'Ettorre** (Univ. of Paris 13, France)	**Zhen Zhang** (Chinese Academy of Forestry, China) **Junheon Kim** (National Institute of Forest Science, Korea) **Kiyoshi Nakamuta** (Chiba Univ., Japan)
9:00-9:30	*Keynote lecture* Exploiting the chemical ecology of tritrophic interactions for crop protection **Ted Turlings**	*Keynote lecture* Collective control of colony development through socially exchanged fluids **Adria C. LeBoeuf**	*Keynote lecture* Trap design factors and deployment methodologies: Effect on forest Coleoptera **Jeremy D. Allison**
9:30-9:45	Crop domestication in peppers: Consequences for direct and indirect plant defense **Michael Garvey**	*Keynote lecture* Sex and parental care: How pheromones regulate family life **Sandra Steiger**	Identification of pheromones of the potentially invasive beetles *Callidiellum villosulum* and *Allotraeus asiaticus* **Jacob D. Wickham**
9:45-10:00	Temporal dynamics of herbivore-induced volatiles provide robust indirect defense in nature **Youngsung Joo**		Use of pheromones for detection and monitoring of native and invasive cerambycid beetles **Jocelyn G. Millar**

10:00-10:15	Larval parasitoid wasp *Lytopylus rufipes* needs both background leaf volatiles and herbivore-induced plant volatile for searching a host **Chia-Ming Liu**	Chemical tactic of juvenile orchid mantis for capturing honeybee **Takafumi Mizuno**	Volatiles released by Cerambycidae beetles used as chemical clues by the pine wood nematode to identify the insect vector inside the dead pine host trees **Luis F. Bonifácio**
10:15-10:30	*Helicoverpa zea* gut-associated bacteria indirectly induce defenses in tomato by triggering a salivary elicitor(s) **Jie Wang**	Queen fire ant inhibits (primer pheromone) female sexual development, but newly-mated female sexuals need a quick colony foundation start **Robert K. Vander Meer**	Identification and field attraction test of aggregation pheromone of *Monochamus saltuarius*, insect vector of pine wood nematode in Korea **Il-Kwon Park**
10:30-10:50	Coffee Break		
10:50-11:05	Herbivore induced plant volatiles affect entomopathogens infectivity **Laila Gasmi**	Social and physiological factors affecting queen-worker pheromone interactions in honeybees **Abraham Hefetz**	Contact sex recognition pheromone of the juniper bark borer, *Semanotus bifasciatus* Motschulsky (Coleoptera: Cerambycidae) **Xiang-bo Kong**
11:05-11:20	Yeast-insect interactions in a tephritid fruit fly pest **Paul Cunningham**	Response profiles of sensory neurons in basiconic sensilla to cuticle hydrocarbons, key semiochemicals for nestmate discrimination in Japanese carpenter ant *Camponotus japonicas*. **Hidehiro Watanabe**	Odorant receptors as molecular markers for pheromone use in the longhorned beetles (Coleoptera: Cerambycidae) **Robert F. Mitchell**
11:20-11:35	Plant cell-wall degrading enzymes improve endophytism of entomopathogenic *M. brunneum* in potato plants **Anant V. Patel**	Ants eavesdropping on the variational trail pheromone in termites leads to signal arms race between the predator and the prey **Ping Wen**	Function of pheromone binding proteins in olfactory recognition of two sympatric *Dendrolimus* **Sufang Zhang**
11:35-11:50	Earwigs (*Labidura riparia*) mimic rotting-flesh odor to deceive vertebrate predators **John A. Byers**	Multifunctional roles of soldier pheromone in a termite **Yuki Mitaka**	Stress-induced host tree chemistry benefits fungus farming by ambrosia beetles **Christopher Ranger**
11:50-12:05	Subtropical plant-insect-parasitoid tri-trophic interactions under elevated CO_2 and temperature **Papitchaya Teawkul**		Test trial for controlling Japanese oak wilt using living trees or mass accumulated oak logs with the aggregation pheromone and kiromone of the Ambrosia Beetle, of *Platypus quercivorus* (Coleoptera, Platypodidae) **Masahiko Tokoro**

12:05-13:10	Lunch		
Session	Session 10 Plant-plant communication	Session 11 General chemical ecology	Session 12 Chemical ecology of invasive species
Room	B101	B102	B103
Organizer	**Kaori Shiojiri** (Ryukoku Univ., Japan) **Richard Karban** (UC Davis, USA)	**Junji Takabayashi** (Kyoto Univ., Japan) **Jeremy N. McNeil** (Western Univ., Canada)	**Jocelyn G. Millar** (UC Riverside, USA) **Kiyoshi Nakamuta** (Chiba Univ., Japan) **David M. Suckling** (The New Zealand Institute for Plant & Food Research Limited, New Zealand)
13:10-13:25	*Keynote lecture* Ecological implications of flowering communication **Ariel Novoplansky**	Spatial distribution of floral scent luring blow fly pollinators into inner cavity of *Rafflesia cantleyi* **Suk Ling Wee**	*Keynote lecture* Searching for Achille's heel: Chemical ecology for invasive species suppression **David M. Suckling**
13:25-13:40		A sesquiterpene attractive to male and female Oriental fruit fly, *Bactrocera dorsalis* **Alvin Kah-Wei Hee**	
13:40-13:55	*Keynote lecture* Insect herbivory selects for volatile-mediated plant communication in *Solidago altissima* **Aino Kalske**	Ecological contexts of mosquito odorant receptor function **Jonathan D. Bohbot**	Correlation of flower color polymorphism and defense phenotype of the invasive weed *Solanum elaeagnifolium* **James Sims**
13:55-14:10		What are stink bug male-produced pheromones doing on eggs? Or not. **Jeffrey R. Aldrich**	Genetic diversity, metabolic variation and functional life-history syndromes suggest multiple mechanisms facilitating invasion in a Brassicaceae species **Lisa J. Tewes**

14:10-14:25	The role of kin discrimination in interspecific competition in *Plantago asiatica* **Akira Yamawo**	Defense allocation upon multiple stresses: Impacts of drought stress on performance of caterpillars and induced defense responses in tomato **Po-An Lin**	Chemotypes in *Erodium cicutarium* (Geraniaceae) of native and invasive origin and effects of plant competition on offspring terpene profiles **Elisabeth J. Eilers**
14:25-14:40	Conversion of green leaf volatiles for processing the information from surrounding environments in tomato leaves **Koichi Sugimoto**	Secretion of isoflavones from soybean roots and their degradation dynamics in the rhizosphere **Akifumi Sugiyama**	Host selection by the olfactory system in *Drosophila suzukii*: Can flies discriminate among fruits by smell? **Claire Duménil**
14:40-15:00	Coffee Break		
15:00-15:15	Pest management using plant-plant signalling mediated by mint volatiles **Satoru Sukegawa**	Mechanisms of resistance to bufadienolide toxins in toad-eating snakes **Alan H. Savitzky**	Olfactory responses of winter morph spotted wing *Drosophila* (*Drosophila suzukii*) to volatile semiochemicals **Danielle Kirkpatrick**
15:15-15:30	Applying plant-plant communication on rice field **Kaori Shiojiri**	The chemical analysis of bufadienolides in defensive glands of the Asian *Rhabdophis* snakes. **Tatsuya Yoshida**	Identification of self-destructive defense system using a hemolymph enzyme, mandelonitrile oxidase, from the invasive millipede, *Chamberlinius hualienensis* **Yuko Ishida**
15:30-15:45	Action of avenacins in oat roots as allelochemicals **Tetsu Tsurushima**	Evolution of chemical mimicry in cuckoo wasp **Thomas Schmitt**	Identification of antennal olfactory receptor neurons and corresponding active compounds in tomato-potato psyllid, *Bactericera cockerelli* **Kye Chung Park**
15:45-16:00	*Keynote lecture* The language of plant communication **Richard Karban**	The biochemical mechanism underlying sex pheromone evolution in *Nasonia* **Joachim Ruther**	Red-necked longhorn beetle, *Aromia bungii*, an invasive pest of Rosaceae trees: Present status of distribution and damage and monitoring trials in Japan **Hiroe Yasui**
16:00-16:15		Where do they come from?: Can we use naturally occurring stable isotopes to better understand seasonal migration of insects **Jeremy N. McNeil**	Mating disruption of a Japanese gypsy moth, *Lymantria dispar japonica* **Hiroyuki Minegishi**

18:30-	Banquet (Venue: Hotel Granvia Kyoto)

August 27 (Sun.)

8:30-	Registration		
Session	Session 13 Ecological omics: genome to the field	Session 14 Plants, microorganisms: next generation insecticides	Session 15 Utilization of semiochemicals in pest management
Room	B101	B102	B103
Organizer	**Gen-ichiro Arimura** (Tokyo Univ. of Science, Japan) **Wilhelm Boland** (MPI Chemical Ecology, Germany)	**Kazuhiko Matsuda** (Kindai Univ., Japan) **Ke Dong** (Michigan State Univ., USA)	**Junwei (Jerry) Zhu** (USDA-ARS, USA) **Tom Baker** (Pennsylvania State Univ., USA) **Rikiya Sasaki** (Fuji Flavor Co., Ltd., Japan)
9:00-9:30	*Keynote lecture* Glucoside transporters in leaf beetle defence: A proteomics approach **Wilhelm Boland**	*Keynote lecture* Selective toxicity profile of plant-based natural products **Jeffrey R. Bloomquist**	*Keynote lecture* Predicting the success of mating disruption **Larry Gut**
9:30-9:45	*Keynote lecture* Deciphering allopolyploidy-mediated innovations in plant defense metabolism against insects using structural metabolomics **Emmanuel Gaquerel**	*Keynote lecture* Modulation of ligand-gated chloride channels by fungal metabolites produced in response to plant factors **Kazuhiko Matsuda**	Codling moth mating disruption 25 years on: How is it working, what's changed, what's new and what is still needed **Don Thomson**
9:45-10:00			Designing a mega-dispenser for sex pheromone mating disruption **Tom Baker**

10:00-10:15	*Keynote lecture* Multiple omics analysis of shikonin production system in *Lithospermum erythrorhizon* **Kazufumi Yazaki**	*Keynote lecture* Molecular basis of pyrethrum repellency in *Drosophila melanogaster* **Ke Dong**	Mating disruption and aerial releases of sterile codling moth in New Zealand: Is local eradication possible? **David M. Suckling**
10:15-10:30			Discoveries of novel long-lasting repellents against biting flies on livestock animals **Junwei (Jerry) Zhu**
10:30-10:50	Coffee Break		
10:50-11:05	*Keynote lecture* Omics everywhere: How about in chemical ecology? **Ivan Galis**	Bioactivities of cardanol derivatives isolated from *Anacardium occidentale* (Cashew) nut shell liquid against *Tribolium castaneum* Hebst (Coleoptera: Tenebrionidae) and *Sitophilus oryzae* L. (Coleoptera: Curculionidae) **Thomas Buxton**	Electrospun mesofibers in precision viticulture: Joint integrated pest management on *Lobesia botrana* (Lep.: Tortricidae), and *Grapholita molesta*, in Germany and Brazil **Simone S. Langner**
11:05-11:20		Asian soybean rust-induced metabolites in a resistant soybean cultivar Hougyoku (PI 224270): Structure determination and antifungal activity evaluation **Ryu Nakata**	Methyl benzoate is a natural, plant-based, and green pesticide for sustainable agriculture **Aijun Zhang**
11:20-11:35	NPR1-mediated immune system in the model monocot plant *Brachypodium distachyon* **Takuya Uemura**	Elucidating the target of communesins, fungal metabolites acting as insecticides **Akira Noguchi**	Production of moth sex pheromones in an oil crop **Bao-Jian Ding**
11:35-11:50	CRISPR/Cas9 mediated three PBP genes knock out in *Spodoptera litura* resulting in low responses of sex pheromone **Shuang-Lin Dong**	Effects of floral scents and their memories on feeding preference of the fly **Mamiko Ozaki**	Mating disruption of codling moth with reduced sex pheromone load dispensers **Alex Il'ichev**

11:50-12:05	Field transcriptomics: Integration of transcriptomics and meteorology **Atsushi J. Nagano**	Development of CO_2-releasing formulations for the control of soil-borne insect pests **Anant V. Patel**	Phagostimulants for the Asian citrus psyllid also elicit volatile release from citrus leaves **Stephen L. Lapointe**
12:30-13:15	Closing Ceremony (Travel & Presentation Awards)		Room: B201
13:30-	Excursion		

As of August 15