

Registration:

Sunday 2 – 6 pm, *Village Conference Desk (adjacent to check-in desk for housing)*
 Monday 7 am – 5 pm, *Price Center*
 Tuesday 7 am – 1 pm, *Price Center*
 Wednesday 8 am – 5 pm, *Price Center*
 Thursday, 8 am – 12 noon, *Price Center*

Posters: Price Center, West Ballroom

Hang on Monday, after 8:30 am
 Posters will be displayed throughout meeting
 Remove on Thursday, by 12:00 noon

SUNDAY

8:45 am – 5 pm Council Meeting,
Village Tower West, 15th Floor, 15C
 6 – 9 pm **MIXER**,
Institute of the Americas Plaza

MONDAY, 8:00 am – 12:30 pm

Theater

Opening Ceremony

8:00 Surendra Dara, Chair, Organizing Committee
 Johannes Jehle, SIP President
 Glenda Humiston, Vice President of Agriculture and
 Natural Resources Division, University of California
 Awards Presentations
 Monique van Oers, Chair, Awards and Student Committee

**SIP Founders' Golden Jubilee Celebration:
 Historical Perspectives of the Society and Invertebrate
 Pathology**

Organizers: Peter Krell, Jimmy Becnel

Jimmy Becnel, Chair, Founder's Lecture Committee
Elizabeth W. Davidson. Looking Back: 50 Years of SIP
Donald W. Roberts. Personal reflections of a founding member
Peter J. Krell, James J. Becnel. SIP Divisions, the beginnings
Ann Cali. Microsporidia
Stefan T. Jaronski. Microbial control of insects 1967-2017:
 How far we have come (and how far we still have to go)

10:00–10:45 Coffee Break

Brian A. Federici, Jean-Louis Schwartz. Insecticidal Bacteria:
 A remarkable success for invertebrate pathology
Just M. Vlaskovits, Zhihong Hu. Fifty years of Invertebrate Virology:
 a stellar course
Richard A. Humber, Jørgen Eilenberg. Fifty years of Fungi
 in fifteen minutes?!
Harry K. Kaya. Symbiosis between entomopathogenic nematodes
 and bacteria: from taxonomy to ecology and genomics
Kelly Bateman, Elke Genersch, Grant Stentiford, Helen Hesketh.
 Diseases of Beneficial Invertebrates

Leellen Solter, Dale Seaton, Brian Federici. The SIP-JIP connection
 through the years: Supporting invertebrate pathology
 research

12:15 Presentation of Plaques – Jimmy Becnel

**MONDAY, 12:30 – 1:30 pm
 LUNCH BREAK**

Price Center West, Bear Room

JIP Editorial Board Meeting and Luncheon

MONDAY, 1:30 – 3:30 pm

Theater

BACTERIA AND MICROBIAL CROSS-DIVISIONAL SYMPOSIUM

Challenges for Biocontrol in Latin America

Organizers and Moderators: Travis Glare and Ken Narva

1:30 Fernando H. Valicente. The use of *Bacillus thuringiensis* and
 Baculovirus based biopesticides in Brazil
 2:00 Ana M. Vélez. Cry1F resistance among lepidopteran pests:
 A model for improved resistance management?
 2:30 Nora Altier, Elena Beyhout, Federico Rivas, Eduardo Abreo,
Trevor Jackson. Microbial products for agriculture in Uruguay
 3:00 Italo Delalibera Junior. Fungal-based biopesticides in Brazil:
 Challenges and opportunities

The Forum

Virus Division #1

Moderators: John P. Burand, Robert L. Harrison

1:30 Aurélien Chateigner, Yannis Moreau, Cindy Pontlevé,
Carole Labrousse, Elisabeth A Herniou. AcMNPV adaptive
 evolution in varying environment
 1:45 Rahul P. Hepat, Martin A. Erlandson, Robert L. Harrison,
Leslie G. Willis, David A. Theilmann. Role of *Plutella xylostella*
 nucleopolyhedrovirus-CL3 ie2 in host range adaptation
 2:00 **STU** Hannah J. Broadley, Woojin Kim, John P. Burand, Joseph S.
Elkinton. Tracing the origin of nucleopolyhedrovirus from an
 invasive species, winter moth *Operophtera brumata* L.
 (Lepidoptera: Geometridae)
 2:15 Yu-Feng Huang, Tzu-Han Chen, Zi-Ting Chang, Se Jin Lee,
Jong Cheol Kim, Jae Su Kim, Chung-Hsiung Wang,
Kuo-Ping Chiua, Yu-Shin Nai. Genome features of *Troides aeacus*
 nucleopolyhedrovirus (TraeNPV) from golden birdwing larvae
 (*Troides aeacus*)
 2:30 Robert L. Harrison, Daniel L. Rowley, Joseph Mowery, Gary R.
Bauchan, John P. Burand. The *Operophtera brumata*
 nucleopolyhedrovirus (OpbuNPV) represents a new and distinct
 lineage within genus *Alphabaculovirus*
 2:45 Rosemary A Dorrington, Meesbah Jiwaji, Janet Awino Awando,
Ritah Nakayinga, Mart-Mari de Bruyn. Crossing kingdoms:
 Providence virus (Family Carmotetraviridae) infects and replicates
 in plants, insects and mammalian cell lines
 3:00 Rosemary A Dorrington, Mart-Mari de Bruyn, Gareth Edward
Hughes, James Roswell Short, Meesbah Jiwaji. No longer a simple
 virus: The alphatetravirus, *Helicoverpa armigera* stunt virus,
 expresses three small proteins that co-localize with the viral
 replicase
 3:15 Xi Wang, Cheng Chen, Fenghua Zhang, Fei Deng, Hualin Wang,
Zhihong Hu, Manli Wang. Characterization of a Group 1
 alphabaculovirus specific gene, *ac5*, from *Autographa californica*
 nucleopolyhedrovirus

MONDAY pm

Roosevelt Room

Microsporidia Division #1

Moderator: TBD

- 1:30 Charles R. Vossbrinck, Bettina A. Vossbrinck, Jinshan Xu. Genome size in Microsporidia: An evolutionary hypothesis
- 1:45 **STU** Pattana Jaroenlak, Piyachat Sanguanrut, Bryony A. P. Williams, Dominic Wiredu-Boakye, Grant D. Stentiford, Timothy W. Flegel, Kallaya Sritunyalucksana, Ornthuma Itsathitphaisarn . Genome, virulence factors, and specific molecular diagnosis of the microsporidian *Enterocytozoon hepatopenaei* (EHP)
- 2:00 **STU** Sarah Biganski, Johannes A. Jehle, Regina G. Kleespies. First finding of a microsporidium of the family Tubulinosematidae infecting *Drosophila suzukii*
- 2:15 Ann E. Hajek, Leellen F. Solter, James J. Becnel. The new species, *Nosema maddoxi*, is a widespread pathogen of the green stink bug *Chinavia hilaris* and the brown marmorated stink bug *Halyomorpha halys*
- 2:30 Sebastian Gisder, Franziska Pieper, Vivian Schüller, Lennard Horchler, Peter Šima, Elke Genersch. Experimental infection of caged honey bees and bumblebees with *Nosema ceranae*
- 2:45 Mia McKinstry, Brittany Johnston, Jonathan W. Snow. The microsporidia *Nosema ceranae* has a unique Heat Shock Response system and is highly sensitive to proteotoxic stress

Marshall Room

Nematodes Division #1

Moderator: Gwen Stevens

- 1:30 **STU** N. Kagimu, T. Ferreira, A.P. Malan. Formulation of three species of entomopathogenic nematodes in alginate beads and diatomaceous earth
- 1:45 **STU** Alexandra Roder, S.P. Stock. Influence of *Xenorhabdus* symbionts on ascaroside production and development of first-generation adults of their *Steinernema* hosts
- 2:00 Dihong Lu, Marissa Macchietto, Dennis Chang, Mirayana M. Barros, James Baldwin, Ali Mortazavi, Adler R. Dillman. Activated entomopathogenic nematode infective juveniles release lethal venom proteins
- 2:15 Yonggyun Kim. Cross-talk between nitric oxide and eicosanoid: a specific inhibition of *Xenorhabdus hominickii* metabolite
- 2:30 Ivan Hiltbold. Root-feeding insects adapt their behavior to bypass plant inducible defenses and attraction of entomopathogenic nematodes
- 2:45 Irma Tandingan De Ley, Rory J. McDonnell, Timothy D. Paine. Susceptibility of invasive gastropods and non-targets to different *Phasmarhabditis* species in the US
- 3:00 **STU** Paul M. Airs, Watcharatip Dedkhad, Mostafa Zamanian, Michael J. Kimber, Lyric C. Bartholomay. Improved RNAi for *Brugia malayi* parasitic nematodes in *Aedes aegypti*
- 3:15 Jun-Zhi Wei, Daniel L. Siehl, Barbara Rosen, Jarred Oral, Christopher G. Taylor, Gusui Wu. An enterotoxin-like binary protein from *Pseudomonas protegens* with potent nematocidal activity

3:30–4:00 pm Refreshment Break

MONDAY, 4:00 – 6:00 pm

Theater

VIRUS DIVISION SYMPOSIUM

Insect virology: Historical achievements and recent advances

Organizer and Moderator: Elizabeth Herniou

- 4:00 Robert Possee. The development and impact (or impacts) of the baculovirus expression system
- 4:24 Taro Ohkawa. Taking the next step: from bugs to cells
- 4:48 Laura Brutcher, Alex McMenamin, Katie Doughenbaugh, Michelle Flenniken. Bee viruses and honey bee health
- 5:12 Karyn Johnson. Antiviral immunity in insects: the impact of RNA interference and *Wolbachia*
- 5:36 Monique van Oers, Vera I.D. Ros. What dawns at the horizon for invertebrate pathology?

The Forum

Bacteria Division #1

Moderators: Baltasar Escriche, Juan Luis Jurat-Fuentes

- 4:00 **STU** Lazarus Joseph, Elmi Dahiru, Thomas Courty, Neil Crickmore. Understanding the basis of Cry2A toxin specificity towards *Aedes aegypti*
- 4:15 Rubina Mushtaq, Abdul Rauf Shakoory, Juan Luis Jurat-Fuentes. Importance of Domain III in Cry1Ac for toxicity against the soybean looper (*Chrysodeixis includens*)
- 4:30 **STU** Arlen Peña-Cardena, Alejandra Bravo, Mario Soberón, Isabel Gómez. Study of *Bacillus thuringiensis* Cry1Ab and Cry1Ac protoxins interaction with cadherin-like receptor and GPI-anchored proteins extract from *Manduca sexta*
- 4:45 Leivi Portugal, Mario Soberón, Alejandra Bravo. Toxicity of Cry1A toxins to CF1 cells does not involve activation of adenylate cyclase/PKA signaling pathway
- 5:00 John Mathis, Catherine Finke, Gilda Rauscher, Mark Nelson, Gusui Wu. Utility of Cry1Ja for transgenic insect control: competitive binding and in planta assays in three lepidopteran species
- 5:15 **STU** Haruka Endo, Shiho Tanaka, Ryoichi Sato. Structures of *Bombyx mori* ABC transporters responsible for mediating Cry1A toxin intoxication
- 5:30 **STU** Mary Carmen Torres-Quintero, Jazmin A. López-Díaz, Sarjeet S. Gill, Mario Soberón, Alejandra Bravo. Participation of different regions of Cyt1Aa toxin from *Bacillus thuringiensis* in hemolysis, synergism and toxicity to *Aedes aegypti* larvae
- 5:45 Michi Izumi Willcoxon, Kishore Kakani, Ruth Cong, Sabina Lau, Yi Zheng, Jingtong Hou, Zhenglin Hou, Takashi Yamamoto. A Cry1B protein showing high activity against *Helicoverpa zea*
- 6:00 Ruth Cong, Jingtong Hou, Ericka Bermudez, Hana Ali, Erica Corson, Katie Harding, Zhenglin Hou, Phil Patten, Gusui Wu, Mike Lassner, Takashi Yamamoto. Engineering of an insecticidal protein specific to corn rootworm

Roosevelt Room

Fungi Division #1

Moderators: Louela Castrillo, Jørgen Eilenberg

- 4:00 Annette Hjorthøj Jensen, Louisa Görg, Jürgen Gross, Anant Patel, Annette Bruun Jensen, Jørgen Eilenberg. A new insect pathogenic fungus from Entomophthorales with potential for psyllid control
- 4:15 **STU** Marjan Heidarian Dehkordi, Hossein Allahyari, Reza Talei Hassanlouei, Bruce L. Parker. Interaction of entomopathogenic fungus *Beauveria bassiana* and predatory mite *Amblyseius swirskii*

on their shared prey, western flower thrips *Frankliniella occidentalis*

- 4:30 **STU** Never Zekeya, Musa Chacha, Patrick A. Ndakidemi, Ernest R Mbega. Entomopathogenic activity of *Aspergillus flavus* against tomato leaf miner, *Tuta absoluta* (Meyrick; 1917) in Tanzania
- 4:45 **STU** Suchitra S. Dara, Sumanth S. R. Dara, Surendra K. Dara, Tim Anderson. *Beauveria bassiana*, *Isaria fumosorosea*, and *Metarhizium brunneum* antagonizing *Fusarium oxysporum* f.sp. *vasinfectum* in cotton
- 5:00 Louela A. Castrillo, Stephen P. Wraight, Sandy Galaini-Wraight, Tracie K. Matsumoto, Lisa Keith. Epizootiological studies of *Beauveria bassiana* infection in coffee berry borers in Hawaii
- 5:15 Cipriano García-Gutiérrez, Cosme Bojórquez-Ramos, Cesar Marcial Bonilla. Pathogenicity of *Beauveria bassiana* native strain in tobacco budworm *Heliothis virescens*
- 5:30 **STU** Juliette Poidatz, Rodrigo J. López Plantey, Denis Thiéry. Use of generalist pathogens to control the invasive predator of bees *Vespa velutina* in Europe
- 5:45 Patricia J. Folgarait, Daniela Goffré, Ariel Marfetán. Field tests on the biological control of leaf-cutter ants, the case of *Acromyrmex lundii*

Marshall Room

Diseases of Beneficial Invertebrates Division #1

Moderators: Annette Bruun Jensen, Helen Hesketh

- 4:00 **STU** Wei-Fone Huang, Zhi Ma. Missing sting reflex in *Nosema ceranae* infected honey bees
- 4:15 **STU** Julia Ebeling, Anne Fünfhaus, Daniel Krska, Ravikiran Ravulapalli, A. Rod Merrill, Elke Genersch. Analysis of C3larvin - a putative virulence factor of *Paenibacillus larvae*, the causative agent of American foulbrood
- 4:30 Ellen Klinger, Diana Cox-Foster. Solitary bee nesting behavior in the presence of pathogen killed larval cadavers
- 4:45 **STU** Jessica Fannon, Dave Chandler, David Evans. Deformed wing virus of honeybees – transmission, diversity and impact on honeybee development
- 5:00 Fernando L. Melo, Diouneia L. Berlitz, Daniel Ardisson-Araujo, Lidia Fiuza, Bergmann Morais Ribeiro. Metagenomic analysis reveals novel RNA viruses in honey bee colonies in Brazil
- 5:15 Amber D. Tripodi, James P. Strange. Creating a baseline and examining spillover with an all-taxa parasite inventory of bumble bees in the United States
- 5:30 Annette B. Jensen, Joanne Malagocka, Jørgen Eilenberg, Brian L. Fredensborg. Viability of *Dicrocoelium dendriticum* metacercariae in *Formica polyctena* ants after freezing, boiling or ethanol treatments

MONDAY, 8:00 – 10:00 pm

Bacteria Division – Business Meeting
(Village Tower West, 15C)

Diseases of Beneficial Invertebrates – Business Meeting
(Village West, Building 2, Room 2C)

Microbial Control – Business Meeting
(Village Tower West, 15th fl., Room 15B)

Nematodes Division – Workshop
(Village West, Building 2, Rooms 2A/2B)

TUESDAY, 6:30 – 7:30 am

SIP 5K Run/Walk

Assemble on North Point Lane in front of the Spanos Athletic Training Facility

TUESDAY, 8:00 – 10:00 am

Theater

VIRUS AND DBI CROSS-DIVISIONAL SYMPOSIUM

Honoring Just Vlæk

Organizers/Moderators: Martin Erlandson, Kelly Bateman

- 8:00 Martin Erlandson. Introduction
- 8:10 Kelly Bateman, Grant Stentiford. DNA viruses of aquatic invertebrates
- 8:30 Gary Blissard, Jeffrey Hodgson, Ya Guo, Zhaofei Li, Nicolas Buchon. Baculovirus budded virions: Entry mechanisms and progress toward understanding virus-cell interactions during entry
- 8:45 David A. Theilmann, Martin A. Erlandson, Leslie G. Willis, Ajay Maghodia, Monique van Oers. Occlusion derived virus the baculovirus virion that is specialized for infection of insect midguts: Identifying proteins essential for oral infectivity
- 9:00 Linda King. Recent advances in biotechnological applications of baculoviruses
- 9:20 Zhihong Hu. Basic research supporting the development of baculoviruses as biopesticides
- 9:40 Johannes A. Jehle. dsDNA Viruses of Invertebrates - Taxonomy and Phylogeny

The Forum

Bacteria Division #2

Moderators: Marianne Carey, Shuyuan Guo

- 8:00 Ben Raymond, Neil Crickmore, C. James Manktelow, Tatiana Dimitriu. Increasing virulence and producing resistance-busting mutants of *Bacillus thuringiensis* using experimental evolution
- 8:15 Jeffrey A. Fabrick, Lolita G. Mathew, Jeyakumar Ponnuraj, Xianchun Li, Yves Carrière, Bruce E. Tabashnik. Resistance to dual-toxin Bt cotton in the pink bollworm, *Pectinophora gossypiella*
- 8:30 Omalthage P. Perera, Nathan S. Little, Calvin A. Pierce, Heba Abdelgaffar, Lin Niu, Randall G. Luttrell, Juan Luis Jurat-Fuentes. Functional evaluation by gene editing of a *Bacillus thuringiensis* Cry1Ac toxin receptor in *Helicoverpa zea*
- 8:45 Hyun-Woo Park, Dennis K. Bideshi, Brian A. Federici. Cry11B enhances efficacy significantly to *Aedes aegypti* when added to a *Bacillus thuringiensis* strain producing the Cyt1A-BinA chimera
- 9:00 David G. Heckel, Andrea Barthel. Interaction of *Bacillus thuringiensis* toxins and abamectin in Cry1Ac-resistant *Heliothis virescens*
- 9:15 **STU** Emre Caner, Umut Toprak, Serife Bayram, Dwayne Hegedus, Doug Baldwin, Cathy Coutu, Martin Erlandson, David Heckel. Modeling peritrophic matrix defense against pathogens infecting per os in *Leptinotarsa decemlineata* (Coleoptera: Chrysomelidae)
- 9:30 Zongxing Tong, Yiling Zhan, Fuping Song, Christina Nielsen-LeRoux, Shuyuan Guo. A chitin binding protein involved in adhesion of *Bacillus thuringiensis* to the insect peritrophic matrix
- 9:45 Kanglai He, Yueqin Wang, Yudong Quan, Zhenying Wang. The impact of plant pyramids and planting mosaic on the evolution of resistance to Bt toxins
- 10:00 **STU** Zengxia Wang, Kanglai He, Shuxiong Bai, Tiantao Zhang, Wanzhi Cai, Zhenying Wang. Impact of parasitization of *Macrocentrus*

TUESDAY am

cingulum and Cry1Ac protein on cellular immunity and humoral immunity within hemolymph of susceptible and resistant Asian corn borer

Roosevelt Room

FUNGI DIVISION SYMPOSIUM

Insect defense against fungal pathogens: mechanisms, variations and efficacy

Organizer/Moderator: Louela A. Castrillo

- 8:00 Nemat O. Keyhani. Defining new cuticle barrier steps in the infection process of insect pathogenic fungi
- 8:30 Yanping (Judy) Chen, Jay D. Evans. Molecular and genomic approaches to microsporidian disease in the European honey bee, *Apis mellifera*
- 9:00 Jorge Contreras-Garduño. Immune priming in *Tenebrio molitor* against *Metarhizium anisopliae*
- 9:30 Renata Borba. Honey bee behavioral defences against fungi

Marshall Room

Microbial Control Division #1

Moderators: Mary Barberchek, Michael Brownbridge

- 8:00 Johannes A. Jehle, Gianpiero Gueli Alletti, Annette J. Sauer, Birgit Weihrauch, Eva Fritsch, Karin Undorf-Spahn, Jörg Wennmann. Using NGS methods to analyze the molecular composition of CpGV isolates and making predictions for field performance
- 8:15 **STU** Jiangbin Fan, Annette J. Sauer, Jörg Wennmann, Dun Wang, Johannes A. Jehle. New Chinese isolates of *Cydia pomonella* granulovirus (CpGV) provide novel genetic diversity in the arms-race of resistance of codling moth
- 8:30 **STU** Sumanth S.R. Dara, Suchitra S. Dara, Surendra K. Dara. Promoting microbial control as an important part of integrated pest management strategies in California
- 8:45 Chad A. Keyser, Brooke Bissinger, Charles Pepe-Ranney, Jeffrey Davis, Milton O. Anyanga, Sinnikka Smith, James Trimble. Sweetpotato weevil microbial control
- 9:00 Denny J. Bruck, Richard Broglie, Matt Ashby. DuPont Crop Biologicals: Harnessing beneficial microbial communities
- 9:15 Dave Chandler, Jude Bennison, Clare Butler Ellis, Roma Gwynn4, Gill Prince, Rob Jacobson, Mark Ramsden, Erika Wedgwood. Helping growers to get the best out of biopesticides: The UK AMBER project
- 9:30 Michael Brownbridge, Bernhardt Steinwender, Taro Saito. Seeing through the fog: Can we use LVM sprayers to improve application efficiency and performance of biopesticides?
- 9:45 Anant V. Patel, Pascal Humbert, Stefan Vidal, Michael Przyklenk, Elisa Beitzten-Heineke, Wilhelm Beitzten-Heineke. Development of CO₂-releasing formulations for the control of soil-borne insect pests

10:00–10:30 am Coffee Break

TUESDAY, 10:30 am – 12:30 pm

Theater

Virus Division #2

Moderators: Peter P. Krell, Lorena Passarelli

- 10:30 Fabricio da Silva Morgado, Daniel Mendes Pereira Ardisson-Araújo, Bergmann Morais Ribeiro. Selected promoter expression analysis of *Anticarsia gemmatalis* multiple nucleopolyhedrovirus during infection of permissive, semipermissive and nonpermissive cell lines
- 10:45 Guoqing Chen, Yang Fang, Wu Lijuan, Peter J. Krell, Guozhong Feng. Functional analysis of the N terminus of *Autographa californica* multiplenucleopolyhedrovirus DNA polymerase
- 11:00 **STU** Carina Bannach, Clare Allen, Linda A. King, Robert D. Possee. Mutagenesis of the carboxyl region of AcMNPV lef-2 and its consequences for protein function
- 11:15 Zhihong Huang, Mengjia Pan, Silei Zhu, Hao Zhang, Wenbi Wu, Meijin Yuan, Kai Yang. A nucleocapsid assembly-essential cis-acting element in the *Autographa californica* nucleopolyhedrovirus ac83 gene
- 11:30 **STU** Silei Zhu, Zhihong Huang, Wenbi Wu, Meijin Yuan, Kai Yang. The nucleocapsid assembly-essential element of *Autographa californica* multiple nucleopolyhedrovirus is located in nt 1651 to 1850 of ac83
- 11:45 Samantha A. Warnecke, Kathlyn L. Gomendoza, Elizabeth M. Martino, A. Lorena Passarelli. A global proteomic analysis of the substrates of a baculovirus sulfhydryl oxidase
- 12:00 Jianxiang Qiu, Zhimin Tang, Yi Cai, Wenbi Wu, Meijin Yuan, Kai Yang. *Autographa californica* multiple nucleopolyhedrovirus ac51 gene encodes a nucleocapsid protein and is required for efficient egress of nucleocapsids to form budded virions
- 12:15 **STU** Keiko Tsuruta, Jörg T. Wennmann, Maki N. Inoue, Yasuhisa Kunimi, Johannes A. Jehle, Madoka Nakai. Deciphering the genetic factor for morphology of granulovirus occlusion body

The Forum

NEMATODES DIVISION SYMPOSIUM

Nematode Omics

Organizer and Moderator: Patricia Stock

- 10:30 Makedonka Mitreva. Looking for nematode biology in tera-bases of sequence data
- 11:00 Julie C. Dunning Hotopp. Lateral gene transfer from bacteria to nematodes ... and beyond!
- 11:30 B.F. Peterson, J.G. McMullen, M.N. Yousefelahi, SP Stock. Transcriptional evidence of symbiont-modulated metabolism in the entomopathogenic nematode *Steinernema carpocapsae* (Nematoda: Steinernematidae)
- 12:00 Ralf J. Sommer. The mechanisms of developmental plasticity: from switch genes and epigenetics to the interplay of organisms and their environment

Roosevelt Room

Fungi Division #2

Moderators: Nemat Keyhani, Drauzio E.N. Rangel

- 10:30 Ariel de Souza Oliveira, Drauzio Eduardo Naretto Rangel. Light during mycelial growth produce conidia of *Metarhizium robertsii* with increased stress tolerance, germination speed, and virulence
- 10:45 **STU** Ronaldo A. Pereira-Junior, Carla Huarte-Bonnet, Flávia R. S. Paixão, Christian Luz, Drauzio E. N. Rangel, Donald W. Roberts, Nicolás Pedrini, Éverton K. K. Fernandes. Over-expression of genes may reveal increased tolerance against

UV-B radiation in *Metarhizium* spp. conidia produced on culture medium supplemented with riboflavin (vitamin B2)

- 11:00 **STU** Mi Rong Lee, Yi-Ting Yang, Se Jin Lee, Sihyeon Kim, Jong Cheol Kim, Jae Su Kim. RNAi-mediated knock down of insect immune-related genes in *Tenebrio molitor* increases entomopathogenic fungal virulence in *Beauveria bassiana* JEF-007
- 11:15 Aya Yanagawa, Marie-Ange Chabaud, Tomoya Imai, Toshimitsu Hata, Tsuyoshi Yoshimura, Frederic Marion-Poll. *Drosophila* usage of chemical cues in removing fungus *Beauveria bassiana* from the body surface
- 11:30 Jonathan B. Wang, Hsiao-Ling Lu, Raymond J. St. Leger. The *Drosophila* model system for analyzing natural variation in resistance to *Metarhizium* spp
- 11:45 Wei Zhang, Yuxian Xia, Nemat O. Keyhani. Host responses to entomopathogenic fungi
- 12:00 Larissa Barelli, Sha Sha Hu, David Liscombe, Michael J Bidochka. Endophytic association of *Metarhizium robertsii* under varying C and N soil conditions and plant immune responses

Marshall Room

Diseases of Beneficial Invertebrates Division #2

Moderators: David Bass, Colleen Burge

- 10:30 Blythe C. Marshman, Malina M. Loeher, Kristin M. Aquilino, Jim D. Moore. Health monitoring and disease management of endangered white abalone (*Haliotis sorenseni*) in a captive breeding program
- 10:45 Nina S. Lottsfeldt, Mariah E. Weavil-Abueg, Lisa M. Crosson, Carolyn S. Friedman. *Candidatus Xenohaliotis californiensis* viability and infectious dose in *Haliotis rufescens*
- 11:00 **STU** Georgia M. Ward, Stephen W. Feist, Ander Urrutia, Stuart Ross, Matthew Green, David Bass. Complementary methods for the detection and characterization of novel haplosporidian parasites of the edible mussel, *Mytilus edulis*
- 11:15 Natalie D. Rivlin, Colleen A. Burge, Collin J. Closek, Carolyn S. Friedman. Development of biomarkers for Ostreid herpesvirus 1 resistance in Pacific oysters
- 11:30 **STU** I.K. Meki, H.M Kariithi, J.M Vlak, M.M. van Oers, A.G. Parker, M.J. Vreysen, A.M.M Abd-Alla. Hytrosavirus genetic diversity and eco-regional spread in *Glossina* species
- 11:45 Guler D. Uzel, Andrew G. Parker, Marc J B. Vreysen, Robert L. Mach, Adly M.M. Abd-Alla. Impact of *Glossina pallidipes* salivary gland hypertrophy virus on the performance of heterologous host, *G. f. fuscipes*
- 12:00 Árni Kristmundsson, Mark Andrew Freeman. Harmless sea snail parasite causes mortalities in numerous commercial scallop populations in the northern hemisphere

TUESDAY, 12:30 – 5:00 pm EXCURSIONS

Boxed lunches are provided for excursion participants. Buses for the San Diego Zoo and Midway excursions depart at 12:30 from the Price Center, and will drop off participants at the Birch Aquarium at 5:30.

TUESDAY, 6:00 – 10:00 pm BARBEQUE at Birch Aquarium

Buses will leave the Village housing area at 5:30 for the Birch Aquarium for those not attending an excursion. Buses will return from the Aquarium as needed between 9 and 10 pm.

WEDNESDAY, 8:00 – 10:00 am

Theater

Bacteria Division #3

Moderators: Juan Ferre, Satomi Adegawa

- 8:00 Marc Zack, Megan Sopko, Meghan Frey, Xiujuan Wang, Jennifer Arruda, Ted Letherer, Sek Yee Tan, Ken Narva. Functional characterization of Vip3Ab1 and Vip3Bc1 N-terminal and C-terminal domains
- 8:15 Yolanda Bel, Núria Banyuls, Maissa Chakroun, Baltasar Escriche, Juan Ferré. Stability of the *Bacillus thuringiensis* Vip3Aa protein to protease digestion
- 8:30 Patricia Hernández-Martínez, Joaquín Gomis-Cebolla, Juan Ferré, Baltasar Escriche. Vip3Ca induces apoptosis in midgut epithelial cells from *Spodoptera exigua* and in cultured *Spodoptera frugiperda* (Sf21) cells
- 8:45 **STU** Zeyu Wang, Longfa Fang, Zishan Zhou, Sabino Pacheco, Mario Soberón, Alejandra Bravo, Jie Zhang. Novel synergistic activity between *Bacillus thuringiensis* Cry9Aa and Vip3Aa toxins against *Chilo suppressalis* (Walker)
- 9:00 **STU** J. Gomis-Cebolla, A. P. S. Ricietto, J. Ferré. A genomic and proteomic approach in the mining of new insecticidal proteins from *Bacillus thuringiensis*
- 9:15 Laurent Consentino, Christophe Buisson, Agnès Rejasse, Christina Nielsen-Leroux. Implication of the *Bacillus cereus* and *B. thuringiensis* siderophore “Bacillibactin” and its Siderophore Bonding Protein (SBP) FeuA in growth and virulence under iron restricted conditions
- 9:30 Yan Hu, Ambily Abraham, Jason Noon, Zeynep Mirza, Hanchen Li, Florentina Rus, David Gazzola, Deysy Tatianan Pinto Rodriguez, Gary Ostroff, Raffi V. Aroian. A revolution in global health: mass-producible purified natural Bt crystals as a drug product
- 9:45 Jennifer Barry, Lu Liu, Eric Schepers, Amy Lum, Janet Rice, Nasser Yalpani, Ryan Gerber, Nuria Jimenez, Fikru Haile, Xiuli Qi, Adane Kassa, Matt Heckert, Weiping Xie, Scott H. Diehn, Virginia C. Crane, Howard Damude, Carol Pilcher, Russ Booth, Mark Nelson, Albert L. Lu, Timothy M. Nowatzki, Gusui Wu. Novel insecticidal proteins from plants for crop protection against major lepidopteran pests

The Forum

MICROSPORIDIA DIVISION SYMPOSIUM

The past and future frontiers in microsporidiology (Retrospective look at Microsporidia research from the first meeting 50 years ago)

Organizer: Yuliya (Julia) Sokolova

Moderators: Leellen Solter and Susan Bjornson

- 8:00 James J. Becnel. Highlights of research on microsporidia from aquatic hosts in North America
- 8:20 Kelly Bateman, Grant Stentiford. Microsporidia in marine invertebrates
- 8:40 Joseph Maddox. The (relatively) early history of microsporidian researchers in North America
- 9:00 John E. Henry. The path to registration of a microbial pesticide
- 9:20 Yuliya Y. Sokolova. History and highlights of microsporidia research in Russia
- 9:40 Louis M. Weiss. Microsporidiosis: Perspective from human infections
- IMPORTANT NOTE: This symposium continues in this room after the coffee break.**

WEDNESDAY am, pm

- 10:30 Santiago Plischuk, Marina Haramboure, Carlos E. Lange. Microsporidia associated with bumble bees in the southern Neotropical region
- 10:50 Emily Troemel. Microsporidia infection in *C. elegans*: how an obligate intracellular parasite makes itself at home
- 11:10 Charles R. Vossbrinck, Yuri Tokarev. Phylogeny of Microsporidia: impact of molecular approaches

Roosevelt Room

Microbial Control Division #2

Moderators: Wendy Gelernter, Travis Glare

- 8:00 **STU** G. Garcia-Arreaez, F. Masson, J.C. Paredes, B. Lemaitre. Toxin-mediated control of insect host population by the endosymbiotic bacteria *Spiroplasma poulsonii*
- 8:15 **STU** Rahul Banerjee, Lucas Hietala, Robert Meagher, Rod Nagoshi, James Hasler, Kenneth Narva, Juan Luis Jurat-Fuentes. DNA-based genotyping for Cry1Fa resistance in field populations of *Spodoptera frugiperda*
- 8:30 **STU** Robert Holdbrook, Catherine E. Reavey, Joanna L. Randall, Yamini Tummala, Sheena C. Cotter, Stephen J. Simpson, Kenneth Wilson. Pathogen growth rate is constrained by host diet
- 8:45 Alejandra Zamudio-Ramírez, Javier Luévano-Borroel, Rosalina García-Suárez, A. Nadin Lule-Chávez, Luis A. Verduzco-Rosas, J. Francisco Castillo-Esparza, Mónica García-Montelongo, Sebastián E. González-Villarreal, Leandro G. Ordoñez-Acevedo, Jorge E. Ibarra. Poor growth of *Bacillus thuringiensis* in larval cadavers
- 9:00 H.M. Mahadeva swamy, R. Asokan. Formulation, field evaluation and commercialization of coleoptera toxic *Bacillus thuringiensis*
- 9:15 Shripad M. Upasani. Screening of four soil bacteria for secondary metabolites (SMs) against pulse beetle for post-harvest preservation of green gram
- 9:30 Jam Nazeer Ahmad, Robert L Harrison, Muhammad Jafir, Ishita Ahuja, Atle Bones, Samina Jam Nazeer Ahmad. Molecular identification, characterization and implementation of *Spodoptera litura* associated NPV for the management of major lepidopteran insect pests of major crop in Pakistan
- 9:45 David Stanley, Cynthia Goodman, Joseph A Ringbauer, Jr., Tamra Reall, Yongguyn Kim. Eicosanoids act in insect/pathogen interactions: cloning and characterization of a phospholipase A₂ from *Heliothis virescens*

10:00–10:30 am Coffee Break

Theater

Virus Division #3

Moderators: Katsuhiko Ito, Ikbal Agah Ince

- 10:30 Dennis K. Bideshi, Tatsinda Spears, Heba Zaghoul, Yeping Tan, Yves Bigot, Brian A. Federici. Ascovirus P64 homologs: A novel family of large cationic proteins that condense viral genomic DNA for encapsidation
- 10:45 **STU** Heba Zaghoul, Robert Hice, Peter Arensburger, Brian A. Federici. Transcriptome analysis of the *Spodoptera frugiperda* ascovirus in vivo provides insights into how its apoptosis inhibitors and caspase promote increased synthesis of viral vesicles and virion progeny
- 11:00 Katsuhiko Ito, Takeshi Fijii, Takeshi Yokoyama, Keiko Kadono-Okuda. Expression profile of nsd-2 gene encoding the putative Bombyx mori bidensovirus receptor after virus infection
- 11:15 Qian Yu, Peng Lü, Yali Xing, Qin Yao. The transcription strategy of Bombyx mori Bidensovirus and a characterization of the viral structural proteins

- 11:30 **STU** Panpan Zhang, Di Miao, Qin Yao. Cloning and rescue of the genome of Bombyx mori bidensovirus and characterization of a recombinant virus
- 11:45 **STU** Yahui Zhang, Peng Lü, Qin Yao. Study the interaction between Bombyx mori bidensovirus structural protein and the host protein +nsd-2
- 12:00 **STU** Pei-Chi Wu, Yueh-Lung Wu. Heliothis zea Nudivirus-1 miRNAs promote latent infection via epigenetic regulation
- 12:15 Ikbal Agah Ince, Zeynep Kanlıdere, Ayca Zeynep İter Akülke, Arzu Özgen. Functional analysis of non-polyadenylated invertebrate iridovirus mRNAs: The role of a CAUUA-containing hairpin

Roosevelt Room

Microbial Control Division #3

Moderators: Trevor Jackson, Stefan Jaronski

- 10:30 Bruce E. Tabashnik, Jeffrey A. Fabrick, Yves Carrière. Global patterns of field-evolved resistance to Bt crops: Successes and failures
- 10:45 Rebekah Kelly, Vadim Beilinson, Mary Kroner and AgBiome team. Discovery of new insecticidal traits
- 11:00 **STU** Brian Lovett, Etienne Bilgo, Abdoulaye Diabate, Raymond St. Leger. Exploiting mosquito biology with transgenic *Metarhizium pingshaense*
- 11:15 **STU** Natalia González-Mas, María Cuenca-Medina, Enrique Quesada-Moraga. Functional response of the predator *Chrysoperla carnea* (Stephens) in an endophytic entomopathogenic fungus aphid management system
- 11:30 Nona Mikaia. Potential of entomopathogenic nematodes Rhabditida: Steinernematidae, *Steinernema carpocapsae* and Heterorhabditidae, *Heterorhabditis bacteriophora* for control of *Planococcus citri* (Risso) (Hemiptera: Pseudococcidae) in Georgia
- 11:45 **STU** Declan Perry, Dave Chandler. A physiological time model to predict the virulence of entomopathogenic fungi under conditions of fluctuating temperature
- 12:00 **STU** Vivien Krell, Desirée Jakobs-Schoenwandt, Stefan Vidal, Anant V. Patel. Plant cell-wall degrading enzymes improve endophytic establishment of *Metarhizium brunneum* in potato plants
- 12:15 Pasco B. Avery, Daniel Carrillo, Rita H. Duncan, Alison Lukowsky, Verónica B. Fuentes, Cecilia Gámez, Ronald D. Cave. Biological control of ambrosia beetles that vector laurel wilt fungus in avocado using entomopathogenic fungi

WEDNESDAY, 12:30 – 1:30 pm
LUNCH BREAK

Roosevelt Room

Nematode Division – Business Meeting

The Forum

Student Workshop on Science Communication

- 12:30 Bruce Lieberman. The road to more effective science communication

WEDNESDAY, 1:30 – 3:30 pm

Theater

Virus Division #4

Moderators: Monique van Oers, Johannes Jehle

- 1:30 Yue Han, Hanneke Suijkerbuijk, Hans M. Smid, Monique M. van Oers, Vera I.D. Ros. Insane in the brain: how baculoviruses manipulate brain function and behavior in caterpillars
- 2:00 **STU** Yue Han, Stineke van Houte, Monique M. van Oers, Vera I.D. Ros. Timely trigger of zombie behaviour: the importance of light exposure timing in baculovirus-induced tree-top disease
- 2:15 **STU** Bob Boogaard, Jan W.M. van Lent, David A. Theilmann, Martin A. Erlandson, Monique M. van Oers. The baculovirus *per os* infectivity factors form a complex to resist proteolytic degradation by larva-derived alkaline proteases
- 2:30 Umut Toprak, Serife Bayram, Dwayne Hegedus. Silencing chitin deacetylase, insect intestinal mucin and response to pathogen genes in *Spodoptera littoralis* (Lepidoptera:Noctuidae): Increases and decreases in the biological activity of baculoviruses
- 2:45 **STU** Fujun Qin, Congrui Xu, Shili Yang, Gaobo Zhang, Chengfeng Lei, Jia Hu, Hanzhong Wang, Xiulian Sun. Dissecting the host cell endocytic trafficking pathway of baculovirus by single-virus tracking and live-cell imaging
- 3:00 **STU** Hiroki Ishij, Eiko Arai, Ikbal Agah Ince, Xiao-Wen Cheng, Dennis Bideshi, Maki N. Inoue, Brian Federici, Madoka Nakai. Comparative study of fast-killing versus slow-killing SfAV isolates
- 3:15 Dong-Shuai Yu, Ya-Bin Chen, Ming Li, Ming-Jun Yang, Yang Yang, Jian-Sheng Hu, Kai-Jun Luo. *Microplitis bicoloratus* bracovirus regulates NF- κ B signaling pathway

The Forum

Bacteria Division #4

Moderators: Marianne Carey, Ming Sun

- 1:30 Estefania Contreras, Swati Chawla, Nadia Qureshi, Jianwu Chen, Sarjeet Gill. Two mosquitocidal *Clostridium bifermentans* strains contain a Cry toxin and a *Clostridium* Neurotoxin-like loci
- 1:45 Luca Ruij. *Brevibacillus laterosporus* insecticidal toxin genes and their expression during pathogenesis
- 2:00 M. Eugenia Nuñez-Valdez, Victor Cruz-López, Mauricio Díaz-Sánchez, Zitlhally Rodríguez-Segura, Jeanwu Chen, Sarjeet Gill. Identification of a genetic locus encoding a *Serratia entomophila* Penicillin-Binding Protein region associated to toxicity towards insect larvae
- 2:15 Rebecca McQuade, Christine Bradshaw, S. Patricia Stock. A novel type six secretion system in the insect-pathogenic bacterium *Xenorhabdus bovienii*
- 2:30 Jisheng Liu, Wenli Liao, Mingli Zhao, Guy Smaghe, Luc Swevers. Influence of exogenous pathogens on the expression of BmToll9-2 gene in larval *Bombyx mori*
- 2:45 Jennifer L. Morrow, Aidan A.G. Hall, Markus Riegler. Symbionts in waiting: the dynamics of incipient endosymbiont complementation and replacement in minimal bacterial communities of psyllids
- 3:00 Michael R. Strand, Kerri L. Coon, Luca Valzania, David A. McKinney, Kevin J. Vogel, Mark R. Strand. Invertebrate pathology in the absence of infection: The role of gut bacteria in mosquito development

Roosevelt Room

Fungi Division #3

Moderators: Richard A. Humber, Jae Su Kim

- 1:30 **STU** Laura Reyes, Dave Chandler. Developing a strain improvement system for the entomopathogenic fungus *Beauveria bassiana*: a way to get better biocontrol agents?
- 1:45 **STU** Se Jin Lee, Sihyeon Kim, Mi Rong Lee, Jae Su Kim. Regulation of gene expression in *Beauveria bassiana* strain infecting *Riptortus pedestris*, bean bug
- 2:00 **STU** Carla Huarte-Bonnet, Juan C. Ponce, Marianela Santana, Eduardo Prieto, Nicolás Pedrini. Alkane-grown *Beauveria bassiana*: Mycelial pellets formation, oxidative stress induction and cell surface alterations
- 2:15 **STU** Sihyeon Kim, Se Jin Lee, Jong Cheol Kim, Mi Rong Lee, Jae Su Kim. Entomopathogenic fungal granules for biological control of *Protaetia brevitarsis seulensis* larvae
- 2:30 Inmaculada Garrido-Jurado, Álex Ríos-Moreno, Enrique Quesada-Moraga. *Metarhizium brunneum* (Ascomycota: Hypocreales) treatments are safe for the generalist predator *Chrysoperla carnea* (Stephens) (Neuroptera: Chrysopidae)
- 2:45 Jae Su Kim, Se Jin Lee, Jong Cheol Kim, Sihyeon Kim, Mi Rong Lee, So Eun Park, Seok Ju Lee, Taek Su Shin, Tae Hoon Kim, Pan Jung Ha, Tae Hyun Park. Ecological biocontrol as a strategy to develop fungal biopesticides for successful pest management (e-Biopesticide)
- 3:00 **STU** Rodrigo J López Plantey, Daciana Papura, Andres E. Riquelme, Antonella Balloni, Pablo H. Pizzuolo, Joana J. Boiteux, Denis Thierry, Gabriella S. Lucero. Isolation, morphological and molecular characterization of entomopathogenic fungi as a potential control strategy against *Lobesia botrana* in Argentinean vine growing areas

3:30–4:00 pm

Refreshment Break

WEDNESDAY, 4:00 – 6:00 pm

POSTERS

West Ballroom

All presenting poster authors should be present at or near their posters.

VIRUS DIVISION POSTERS

- Vir01 Martin A. Erlandson, Doug Baldwin, Andrew Keddie, George Rohrmann, David A. Theilmann. Genomics of alphabaculovirus isolates infecting *Malacosoma disstria* in North America
- Vir02 Elisabeth A. Herniou, Julien Thézé, Aurélien Chateigner, Shannon Escasa, Martin Erlandson, David Thielmann, Jennifer S. Cory. Oddities in the genome of the alphabaculovirus infecting *Malacosoma californicum pluviale*
- Vir03 Gloria P. Barrera, Juliana Gómez, Mariano N. Belaich, Pablo D. Ghiringhelli, Carlos Espinel, Laura Villamizar. Genomic comparisons among Phthorimeae operculella granuloviruses isolated from different hosts in field
- Vir04 Gloria P. Barrera, Mariano N. Belaich, Pablo D. Ghiringhelli, Judith Guevara, Laura Villamiza. A new Group II alphabaculovirus isolated from *Spodoptera ornithogalli*
- Vir05 William Sihler, Márcio Martinello Sanches, Rosana Falcão, Murilo Fanzolin, Joelma Lima Vidal Estrela, Marlinda Lobo de Souza. Characterization of baculovirus pathogenic to cassava hornworm (EreIGV) from Cruzeiro do Sul, Acre, Brazil

WEDNESDAY pm

- Vir06 Umut Toprak. First report of iflavirus infection in *Spodoptera littoralis* (Lepidoptera:Noctuidae)
- Vir07 Qinfen Zhang, Yuanzhu Gao , Qianqian Wang, Jiamiao Huang, Shaoping Weng, Jianguo He. A new virus infected mud crab revealed by Cryo-EM
- Vir08 **STU** Raquel Arinto-Garcia, Sarah Irons, Louise Hughes, Chris Hawes, Linda King, Robert Possee. Characterization of a persistent baculovirus infection established in an insect cell line
- Vir09 Emine Özşahin, Éva Nagy, Peter J. Krell. Autographa californica multiple nucleopolyhedrovirus ME53 interacts with VP80, LEF5, EXON0, VP39 and GP64
- Vir10 Miguel S. Andrade, Daniel M. P. Ardisson-Araújo, Daniel R. Sosa-Gomez, Fernando L. Melo, Bergmann M. Ribeiro. Deletion of the p94 (ac134) gene of the Autographa californica multiple nucleopolyhedrovirus induces a delay in virus DNA replication, BV production, and insect mortality
- Vir11 Jin Zhao, Weiwen Qin, Jinwen Wang. AcMNPV-miR-6 down-regulates expression of host gene alg-2
- Vir12 Ma. De los Angeles Bivián-Hernández, Ma. Fabiola León Galván, Mayra Chico Andrade, Ma. Cristina Del Rincón-Castro. *In vivo* transcriptome under suppression subtractive hybridization (SSH) of the Betabaculovirus TnGV in *Trichoplusia ni* larvae
- Vir13 Yu-Shin Nai, Ju-Chun Chang, Se Jin Lee, Jae Su Kim. Functional assay of ORF105 (APSUP) from Lymantria xyliina multiple nucleopolyhedrovirus (LyxyMNPV)
- Vir14 **STU** JiHoon Lee, WonSeok Gwak, Jiln Ma, DongJun Kim, HwiGeon Yun, JongMin Oh, SooDong Woo. Construction of hyper baculovirus expression vector by the optimization of enhancer factors
- Vir15 Zhimin Tang, Qinying Lai, Meijing Yuan, Wenbi Wu, Kai Yang. The effects of transfection of bacmid DNA together with the helper plasmid on determination of defective virus multiplication capacity
- Vir16 Ikkei Shikano, Elizabeth M. McCarthy, James Slavicek, Kelli Hoover. Induced plant defenses delay within-instar developmental resistance of fall armyworms, *Spodoptera frugiperda*, to the baculovirus SfMNPV
- Vir17 **STU** Rie Ohta, Maki N. Inoue, Yasuhisa Kunimi, Madoka Nakai. The hemolymph of *Mythimna separata* larvae infected with an entomopoxvirus kills parasitoid-derived cell
- Vir18 **STU** Sarah Pendell, Rollie J. Clem. Effect of gut bacteria on Sindbis virus replication in the mosquito *Aedes aegypti*
- Vir20 Claudia Efigenia Pereira silva, William Sihler, Ana Cristina MM Gomes, Marlina Lobo de Souza, Márcio Martinello Sanches. Evaluation of Anticarsia MNPV and Pseudaletia SNPV co-infection in insect cell culture
- Vir21 **STU** WonSeok Gwak, JiHoon Lee, Jiln Ma, Dong Jun Kim, HwiGeon Yun, SooDong Woo. Production of porcine epidemic diarrhea virus (PEDV) VLP using the baculovirus expression vector system in *Bombyx mori*
- production to be used in assessment tests accreditation of bioinsecticides toxicity for controlling *Aedes aegypti*
- Bac04 **STU** C J Manktelow, G Simmons, B Raymond. Superior *in vivo* growth of *Bacillus thuringiensis* strains suggests a specialisation towards insect pathogenicity and single original *B. thuringiensis* clade
- Bac05 J. Nicolás Lazarte, Rocio P. Lopez, Corina M. Berón. Genome sequence of mosquitocidal native *Bacillus thuringiensis* strain from Argentina
- Bac06 Caroline Placidi De Bortoli, Rafael Ferreira dos Santos, Alessandra Marieli Vacari, Neil Crickmore, Sergio Antonio De Bortoli, Ricardo Antonio Polanczyk. Toxicity of *Bacillus thuringiensis* Cry1Ac toxin in different *Plutella xylostella* (L.) (Lepidoptera: Plutellidae) populations
- Bac07 Caroline Placidi De Bortoli, Rafael Ferreira dos Santos, Siobhan Clerkin, Neil Crickmore, Sergio Antonio De Bortoli, Ricardo Antonio Polanczyk. Factors involved in resistance to *Bacillus thuringiensis* of Brazilian *Plutella xylostella* populations.
- Bac08 Caroline Placidi De Bortoli, Rafael Ferreira dos Santos, Gilmar da Silva Nunes, Camila Pires Cardoso, Alessandra Marieli Vacari, Neil Crickmore, Sergio Antonio De Bortoli, Ricardo Antonio Polanczyk. Laboratory resistance *Plutella xylostella* (L.) (Lepidoptera: Plutellidae) to Cry1Ac toxin and HD1 strain of *Bacillus thuringiensis*
- Bac09 Cristina Macedo, Erica Martins, Paulo Queiroz, Lilian Praça, Marcelo Soares, Barbara Eckstein, Isabel Gomez, Mario Soberon, Alejandra Bravo, Rose Monnerat. Study of the susceptibility of *Spodoptera frugiperda* (LEPIDOPTERA: Noctuidae) in corn cultures expressing the Cry1F toxin from *Bacillus thuringiensis* in Brazil
- Bac10 **STU** Joaquín Gomis-Cebolla, Tom Walsh, Sharon Downes, Wendy Kain, Ping Wang, Kathy Leonard, Tom Morgan, Brenda Oppert, Juan Ferré. Analysis of cross-resistance of resistant insect colonies from different species to Vip3Ca from *Bacillus thuringiensis*
- Bac11 Biviana Flores Escobar, Benjamin Deist, M. Teresa Fernandez Luna, Bryony Bonning. Modification of a *Bacillus thuringiensis* toxin to target soybean aphid (*Aphis glycines*)
- Bac12 M. Teresa Fernandez-Luna, Michael Blackburn, David Hall, Biviana Flores-Escobar, Pavan Kumar, Bryony Bonning. Modification of a Bt toxin to target Asian citrus psyllid (*Diaphorina citri*, Hemiptera)
- Bac13 Premchand Gandra, Kenneth E. Narva, Andrew J. Bowling, Heather E. Pence, Haichuan Wang, Blair Siegfried. Patterns of gene expression and histopathological effects in western corn rootworm (*Diabrotica virgifera virgifera*) neonates, challenged with Cry 34/35 Ab1
- Bac14 **STU** Haruka Endo, Satomi Adegawa, Ryoichi Sato. The intracellular region of the *Bombyx mori* cadherin-like protein is not necessary to mediate cytotoxicity of Cry1A toxins
- Bac15 Núria Banyuls, C. Sara Hernández-Rodríguez, Jeroen Van Rie, Juan Ferré. Critical amino acids for the insecticidal activity of Vip3Af from *Bacillus thuringiensis*
- Bac16 **STU** Min Gu Park, Jong Hoon Kim, Jae Young Choi, Seok-Hee Lee, Ying Fang, Dong Hwan Park, Ra Mi Woo, Bo Ram Lee, Woo Jin Kim, Yeon Ho Je. Construction of plasmid vector for dsRNA synthesis with *Bacillus thuringiensis* by using sporulation-dependent promoter
- Bac17 Yonggyun Kim. Calcium-independent cellular PLA2 prevents lipid peroxidation, which is detrimental to development and immunity of the Indian meal moth, *Plodia interpunctella*
- Bac18 Elias Ferreira Sabiá Júnior, Sandro Coelho Linhares Montalvão, Marcelo Tavares de Castro, Carlos Marcelo Soares, Luiz Eduardo Bassay Blum, Rose Gomes Monnerat. Selection of *Bacillus thuringiensis* strains against *Fusarium oxysporum* f.sp. *vasinfectum*
- Bac19 Songqing Wu, Bairong Lin, Yan Peng, Carballar-Lejarazú Rebeca3, Ivan Gelbič, Lei Xu, Xiong Guan, Lingling Zhang. Dynamic

BACTERIA DIVISION POSTERS

- Bac01 **STU** Hiroshi Arai, Takumi Takamatsu, Tatsuya Hirano, Madoka Nakai, Yasuhisa Kunimi, Maki N. Inoue. Sex ratio distortion in tea pest *Homona magnanima*: a complicated association of host and endosymbiotic microbes
- Bac02 Liliane Botelho Praça, Ester Yoshie Yosino da Silva, Rose Gomes Monnerat. Bacteria Collection of Invertebrates, one of the four Brazilian collections of the Global Net of Biological Resources: Challenges and expectations
- Bac03 Liliane Botelho Praça, Zonaithe Gomes Almeida, Ester Y. Y. da Silva, Carla Ferreira Caixeta, Carlos Marcelo Soares, Rose Gomes Monnerat. *Bacillus thuringiensis israelensis* reference material

- distribution and colonization of inoculated *Bacillus thuringiensis* on the tissues of *Arabidopsis thaliana*
- Bac20 Flávia S. S. Santana, Carlos M. Soares, Rose G. Monnerat. Promotion of plant growth by *Bacillus thuringiensis* in Brazil
- Bac21 Jianwei Shi, Donghai Peng, Fengjuan Zhang, Lifang Ruan, Ming Sun. The *Caenorhabditis elegans* CUB-like-domain containing protein F35E12.10 functions as a receptor for *Bacillus thuringiensis* Cry6Aa toxin
- Bac22 Theodore W. Kahn, Mandy Bush, Sara Lenzen, Jessica Monserrate, Alberto Bressan. Physiological and histopathological effects of new proteins toxic to southern green stink bug (*Nezara viridula*)
- Bac 23 I. S. Shilova, A. J. Johnson , L. Chan, M. David, I. W. Davis, J. A. Haas, S. Jain, S. Iwai, P. Loriaux¹ P. Ramachandran, E. Rutherford, K. M. Wegener, T. Weinmaier, R. J. Williams, Y. Wu¹, T. Z DeSantis, K. A. Bennett. Mining microbial metagenomes for novel insecticidal proteins
- Bac24 Ying Huang, Kui Wang, Changlong Shu, Jie Zhang. The analysis of *Bacillus thuringiensis* tolerance to insect hemolymph and its effects on infection efficiency
- Bac25 Jian Jiang, Changlong Shu, Jie Zhang. The purification and mechanism analysis of *Holotrichia oblita* toxic Vip1/Vip2 binary protein
- Bac26 **STU** Christine Bradshaw, Rebecca McQuade, S. Patricia Stock. A novel Type Six Secretion System in the entomopathogenic bacterium *Xenorhabdus bovienii* may impact insect virulence and bacterial competition
- Bac27 **STU** Isabel Forlastro, Rebecca McQuade, V. K. Viswanathan, S. Patricia Stock. Evaluation of *Galleria mellonella* (Lepidoptera: Pyralidae) as a complementary model organism to study enteropathogenic *E. coli*

MICROSPORIDIA DIVISION POSTERS

- Msp01 Jessica N. Sowa, Emily R. Troemel. The role of the decapping enzyme EOL-1 in *C. elegans* intracellular infection response
- Msp02 Thomas C. Webster, Martin Matisoff, Katherine Kamminga, Cecil Butler. Secretion of the peritrophic matrix in the honey bee, *Apis mellifera*, midgut is impaired by *Nosema ceranae* infection
- Msp03 Julie V. Hopper. The abundance and distribution of *Nosema ceranae* in honeybees in Mo'orea and Tahiti, French Polynesia
- Msp04 **STU** JiIn Ma, DongJun Kim, InHui Kim, WonSeok Gwa, HwiGeon Yun, JongMin Oh, JiHoon Lee, SooDong Woo. Anti-*Nosema* activity of entomopathogenic fungi cultural filtrates in honeybee nosemosis
- Msp05 George Kyei-Poku, Debbie Gauthier. Serendipitous Finding: Wild populations of Spruce Budworm are infected with both *Nosema fumiferanae* and a *Cystosporogenes* species
- Fun07 Cristian Montalva, Alex Gonzalez, Eladio Rojas, Eduardo Valenzuela, Richard A. Humber. Results of preliminary investigations on entomopathogenic fungi affecting important weevil and aphid forest pests in southern Chile
- Fun08 Marcelo T. de Castro, Sandro C. L. Montalvão, Daniela A. de Souza, Rose G. Monnerat. Pathogenicity of an isolate of *Beauveria bassiana* at *Hypsipyla grandella* collected in Brasilia, Brazil
- Fun09 Miguel Bernardo Najera-Rincon, Abraham Barajas-Mendoza, Netzahualcoyotl Barron Valle, Guadalupe Zitlalpopoca-Hernandez, John Larsen. Occurrence and ecological aspects of entomopathogenic fungi in maize agroecosystems of Central Mexico
- Fun10 **STU** Scott Dwyer, Dave Chandler. Biologically-based control of *Varroa destructor*
- Fun11 Chun Chen, Yaqiang Hu, Sudan Ye, Huajun Hu, Xiaoping Yu. Use of electrical penetration graphs (EPG) and quantitative PCR to evaluate the relationship between feeding behaviour and *Pandora neoaphidis* infection levels in green peach aphid, *Myzus persicae*
- Fun12 Qasim Al Souhail, Daisuke Takahashi, Michael R. Kanost. The antifungal peptide diapausin-1 from *Manduca sexta* binds to β -1,3-glucan in fungal cell walls
- Fun13 Eric H. Clifton, Stefan T. Jaronski, Brad S. Coates, Erin W. Hodgson, Aaron J. Gassmann. Effects of endophytic entomopathogenic fungi on soybean aphid, *Aphis glycines*
- Fun14 **STU** Ra Mi Woo, Jong Hoon Kim, Jae Young Choi, Seok-Hee Lee, Ying Fang, Dong Hwan Park, Min Gu Park, Bo Ram Lee, Woo Jin Kim, Jae Su Kim, Yeon Ho Je. Insect growth regulatory and insecticidal activities of secondary metabolites from entomopathogenic fungi
- Fun15 **STU** So Eun Park, Se Jin Lee, Sihyeon Kim, Jong Cheol Kim, Mi Rong Lee, Jae Su Kim. Solid culture of *Isaria javanica* and *I. fumosorosea* on grain substrates for enhanced conidial thermotolerance
- Fun16 Laura Villamizar, Tracey Nelson, Sean Marshall, Sandra Jones, Marie Foxwell, Trevor A. Jackson. Effect of culture media on storage stability of *Beauveria pseudobassiana* microsclerotia formulated as dry granules
- Fun17 Carla Huarte-Bonnet, Flávia R. S. Paixão, Éverton K. K. Fernandes, Nicolás Pedrini. *Beauveria bassiana* produces microsclerotia-like propagules with active peroxisome biogenesis
- Fun18 Inmaculada Garrido-Jurado, Álex Ríos-Moreno, María del Carmen Raya-Ortega, Enrique Quesada-Moraga. Quantification of fungal growth and destruxin A during infection of *Galleria mellonella* L. (Lepidoptera: Pyralidae) larvae by *Metarhizium brunneum* Petch (Ascomycota; Hypocreales)
- Fun19 Cíntia C. Bernardo, Lucas P. Barreto, Cárita de S. R. e Silva, Christian Luz, Walquíria Arruda, Éverton K.K. Fernandes. Infection of the tick *Rhipicephalus microplus* treated with conidia or blastospores of *Metarhizium* spp. and *Beauveria bassiana*
- Fun20 Lucélia Santi, Caio Jr B. Coutinho-Rodrigues, Markus Berger, Wendell M.S. Perinotto, John R. Yates, Jorge A. Guimarães, Vania R.E.P. Bittencourt, Walter O. Beys-da-Silva. Secretome of the biocontrol fungus *Beauveria bassiana* related to infection of the cattle tick *Rhipicephalus microplus*
- Fun21 Walter O. Beys-da-Silva, Markus Berger, John R. Yates, Jorge A. Guimarães, Lucélia Santi. Secretome of the biocontrol fungus *Metarhizium anisopliae* related to infection of the cattle tick *Rhipicephalus microplus*
- Fun22 Kimemia, Jane Wanjiru; Ombura, Levi Odhiambo, Elizabeth Kusia, Fathiya Khamis, Christian Borgemeister, Sunday Ekesi, Sevgan Subramanian. Isolation and characterization of *Bionectria ochroleuca* as an entomopathogenic fungi from edible Saturniid in Kenya
- Fun23 Mohammed. I. Elbashir, Ebtisam M. Bashir, Alnazir. I. Mohamed' Colonization of some horticultural crops with indigenous *Beauveria bassiana* as endophytic prophylactic protective agent

FUNGI DIVISION POSTERS

- Fun02 Daniela Goffré, Ema Cavallo, Patricia J. Folgarait. Studying the interaction among fungi involved in the multiple biological control of leaf-cutter ants
- Fun03 Daniela Goffré, Lucas A. Martínez, Nicolás F. Lucero, Patricia J. Folgarait. The importance of studying preservation methods of microorganisms used in the biological control of ants
- Fun04 Richard A. Humber, Christian Luz, Cristian Montalva, Manuel E. Rueda-Páramo. Intensive studies on the biodiversity of fungal entomopathogens of mosquitoes and other dipteran vectors of major human and animal diseases in central Brazil
- Fun05 **STU** Juscelino Rodrigues, Richard A. Humber, Éverton K. K. Fernandes, Christian Luz. Activity of *Culicinomyces* spp. (Hypocreales: Cordycipitaceae) against *Aedes aegypti* eggs, larvae and adults
- Fun06 Caroline Bergamini, Cristian Montalva, Juscelino Rodrigues, Richard A. Humber, Christian Luz. Adaptation of a simple method to detect entomopathogenic fungi from mosquito larvae

WEDNESDAY pm

- Fun24 M.I. Elbashir, Abdelbaset Hassan, Edur Balla Zahran. Establishment protocols for *Beauveria bassiana* in *Arachis hypogaea*, potential for controlling plant pests and diseases
- Fun25 **STU** Jong Cheol Kim, Sihyeon Kim, Se Jin Lee, Mi Rong Lee, Seok Ju Lee, So Eun Park, Jae Su Kim. Baiting system-mediated collection and characterization of entomopathogenic fungi for library construction; JEF entomopathogenic fungal library

NEMATODES DIVISION POSTERS

- Nem01 Sandro C. L. Montalvão, Marcelo T. de Castro, Rose G. Monnerat, Luiz E. B. Blum. Mechanism of action of *Bacillus methylotrophicus* to control *Meloidogyne incognita* on cotton
- Nem02 Sandro C. L. Montalvão, Marcelo T. de Castro, Rose G. Monnerat, Luiz E. B. Blum. Mechanism of action and evaluation of efficiency of products with *Bacillus* to control *Meloidogyne incognita* races 3 and 4 on cotton under greenhouse
- Nem03 Ryan Geisert, Bruce Hibbard, Kent Shelby, Tom Coudron. Susceptibility and viability of larval *Diabrotica virgifera virgifera* as a host for entomopathogenic nematodes
- Nem04 Jaime Ruiz-Vega, C. Cortés-Martínez, C. García-Gutiérrez, F. Diego Nava. Efficacy of *Steinernema carpocapsae* formulated in sodium alginate capsules against *Phyllophaga vetula* in semi-field conditions
- Nem05 Glen N. Stevens, Greta Mosley, J. Chris Bergh. Detecting and quantifying EPN in Virginia, USA, vineyards using qPCR
- Nem06 Glen N. Stevens, Glen'Asia Cox. Studying entomopathogenic nematodes in an undergraduate lab setting: the consequences of soil sterilization on EPN infection rates.
- Nem07 Bruna A. Guide, Thiago A. Fernandes, Matheus C. Marcomini, Dhiego G. Ferreira, Dayanne da S. Alves, Viviane S. Alves, Pedro M. O. J. Neves. Occurrence of *Steinernema arenarium* in agricultural soil of School Farm of the State University of Londrina, Paraná, Brazil
- Nem08 Paul Medina, Dihong Lu, Dennis Chang, Adler Dillman. Investigation of how the entomopathogenic nematode *Heterorhabditis bacteriophora* suppresses the host immune system

DISEASES OF BENEFICIAL INVERTEBRATES DIVISION POSTERS

- DBI01 Jenny L. Shanks, Anthony M. Haigh, Markus Riegler, Robert N. Spooner-Hart. First confirmed report of a bacterial brood pathogen in stingless bees
- DBI02 Woo Jin Kim, Seok-Hee Lee, Ying Fang, Jong Hoon Kim, Dong Hwan Park, Ra Mi Woo, Min Gu Park, Bo Ram Lee, Jae Young Choi, Yeon Ho Je. Transcriptome sequencing and *in silico* cDNA library construction of *Varroa destructor*, a parasitic mite of honeybee

MICROBIAL CONTROL DIVISION POSTERS

- MCn01 Mehdi Dastranj, Marjan Heidarian Dehkordi, Sajjad Sarikhan, Ghasem Hosseini Salekdeh. *Serratia marcescens* as a bacterial pathogen of sunn pest, *Eurygaster integriceps* (Hemiptera: Scutelleridae)
- MCn02 Freya Scoates, Annabel Rice, Ken Wilson, David Grzywacz, Igor Curcic, Aoife Dillon. Developing a novel virus biopesticide to target major lepidopteran pests
- MCn03 Alessandra Benatto, Maria Cristina Neves de Oliveira, Suely Ruiz Giolo, Vanessa F. Sehaber, Gizele Rejane Baldo, Jhibran Ferral Piña, Daniel Ricardo Sosa-Gómez. Effect of optical brighteners on ChinNPV infectivity on *Chrysodeixis includens* caterpillars in bioassays and greenhouse

- MCn04 Nathália A. dos Santos, Dagmara G. Ramalho, Valéria L. de Laurentis, Vanessa F. P. de Carvalho, Alessandra M. Vacari, Sergio A. De Bortoli. Effect of *Bacillus thuringiensis* products on larval survival and consumption of *Plutella xylostella*
- MCn05 Ayda Khorramnejad, Reza Talei-Hassanloui, Vahid Hosseiniaveh, Yolanda Bel, Baltasar Escriche. Characterization of newly isolated Iranian *Bacillus thuringiensis* strains based on gene content, proteomic analysis and insecticidal activity
- MCn06 Govinda Shrestha, Gadi V.P. Reddy, Stefan T. Jaronski. Field efficacy of *Bacillus thuringiensis galleriae* strain SDS-502 for the management of alfalfa weevil and the impact on *Bathyplectes* spp. parasitization rate
- MCn07 Jiaheling Qi, Naoki Takahashi, Daigo Aiuchi, Shin-ichiro Asano, Masanori Koike. Entomopathogenic *Bacillus thuringiensis* as biological control agent for complex disease (tomato *Fusarium* wilt and root knot nematode)
- MCn08 Todd Kabaluk, Erica Li-Leger. A molecular survey of the wireworm microbiome and its variation among habitats
- MCn09 Yonggyun Kim. Feeding diel rhythm and insulin receptor expression of *Maruca vitrata*
- MCn10 Jam Nazeer Ahmad, Mujahid Manzoor, Samina Tanwir Ahmad, Muhammad Jafir, Samar Abbas Naqvi, Iqar Ahmad Khan. Molecular detection, characterization and biological evaluation of Red Palm Weevil (*Rhinchophorus ferrugineus*) associated fungal entomopathogen (*Metarhizium anisopliae*) from Pakistan
- MCn11 Anant V. Patel, Peter Spieth, Hanna Bednarz, Ina Kleeberg, Karsten Niehaus. Production of secondary metabolites from *Azadirachta indica* and their efficacy against Sf9 cell cultures
- MCn12 Anant V. Patel, Linda Muskat, Pascal Humbert, Jürgen Gross, Louisa Görg, Cornelia Dippel, Elisa Beitzen-Heineke, Wilhelm Beitzen-Heineke, Michael Przyklenk. The project PICTA-KILL - Novel strategies for biological psyllid pest control
- MCn13 Anant V. Patel, Sissy-Christin Lorenz, Pascal Humbert, Marion Wassermann, Ute Mackenstedt, Michael Przyklenk, Elisa Beitzen-Heineke, Wilhelm Beitzen-Heineke, Kerstin Büchel, Hans Dautel. Development of a biological tick control agent based on an innovative attract-and-kill strategy (BIOZEC)
- MCn14 Anant V. Patel, Katharina Hermann, Pascal Humbert, Michael Przyklenk, Elisa Beitzen-Heineke, Wilhelm Beitzen-Heineke, Stefan Vidal. The project ATTRACAP: Optimization of an attract-and-kill strategy for wireworm control in potato
- MCn15 JiHoon Lee, HwiGeon Yun, Dong Jun Kim, JiIn Ma, WonSeok Gwak, SooDong Woo. Various roles of mite pathogenic fungi against *Tetranychus urticae* (two-spotted spider mite)
- MCn16 HwiGeon Yun, JiHoon Lee, Dong Jun Kim, JiIn Ma, WonSeok Gwak, SooDong Woo. Diverse activities of entomopathogenic fungi with the virulence against *Myzus persicae* (green peach aphid)
- MCn17 Patrícia S. Golo, Thais A. Correia, Caroline F. Pereira, Danilo M. Akiau, Donald W. Roberts, Vânia R.E.P. Bittencourt. A search for novel *Metarhizium* isolates for control of *Rhipicephalus microplus* ticks
- MCn18 Juliana Gómez-Valderrama, Lorena García Riaño, Diana Marcela Monroy, Gustavo Adolfo Araque, Carlos Espinel, Laura Villamizar. Enhancement of *Beauveria bassiana* virulence and efficacy to control *Diatraea saccharalis* in a sugarcane crop for panela production
- MCn19 Allan F. Marciano, Deborah E. Henderson, Patrícia S. Golo, Vania R. E. P. Bittencourt, Athena Williamson, Lisa Wegener. Selection of *Metarhizium* sp isolates based on thermotolerance, endophytic colonization and a gene expression assay
- MCn20 Maribel Portilla, Randall Luttrell, Gordon Snodgrass, Yu Cheng Zhu, Eric Riddick. Lethality of the entomogenous fungus *Beauveria bassiana* Strain NI8 on *Lygus lineolaris* (Hemiptera: Miridae) and its possible impact on beneficial arthropods

Microbial Control Division #4

Moderators: Roma Gwynn, Dietrich Stephan

- MCn21 Frank B. Antwi, Govinda Shrestha, Gadi V.P. Reddy, Stefan T. Jaronski. Entomopathogens in conjunction with imidacloprid could be used to manage wireworms (Coleoptera: Elateridae) on spring wheat
- MCn22 Mohammed I. Elbashir, P. Bishwajeet, K. Shankarganesh, P. Sharma. Performance of three Indian isolates of *Beauveria bassiana* (Balsamo) Vuillemin and three commercial mycoinsecticides against three developmental stages of *Bactrocera dorsalis* (Hendel) (Diptera:Tephritidae)
- MCn23 Sana Gardescu, Ann E. Hajek, Tarryn A. Goble, Mark A. Jackson. Testing formulation improvements for application of the entomopathogenic fungus *Metarhizium brunneum* to control Asian longhorned beetles
- MCn24 Rivas F., Jackson T. A., Altier N., Rostás M., Hampton J., Glare T. R. **STU** Coating of maize seeds with entomopathogenic fungi promotes rhizosphere colonization, endophytic ability and provides biocontrol of a pest and pathogen
- MCn25 Alex Delgado, Richard Hall, Daniel Navia, William Viera, Francisco Báez, Mirian Arias, Trevor A. Jackson. Evaluation of pyrethrum, extract of *Saccharopolyspora spinosa*, *Beauveria bassiana* and *Metarhizium anisopliae* for the control of *Chaetanaphothrips signipennis*, a pest of banana
- MCn26 Mohammed M. Abdelbaset Hassan, Dipali Majumder, Dwipendra Thakuria, Krishnappa Rangappa. Evaluation of biocontrol potential, plant growth promoting activities and physiological effects of bacterial endophytes against major pathogens of rice in Eastern Himalaya Region of India

- 8:00 Tracy K. Webb, Kristi R. Sanchez, Chun-Jou Hsiang, Kristen J. Rasmussen, Marc Rist, Malte Roemer, Punita Juneja, Matthew R. Tarver, Reed N. Royalty. Characterization of the efficacy and yield promoting effects of the nematopathogenic fungus *Purpureocillium lilacinum*: Greenhouse evaluation of BioAct DC (*Purpureocillium lilacinum* strain 251): understanding and predicting in-field efficacy and beneficial effects on yield
- 8:15 Kristi R. Sanchez, Marc Rist, Matthew R. Tarver, Reed N. Royalty. Development of a laboratory testing cascade to predict the in-field activity of the nematopathogenic fungus *Purpureocillium lilacinum*
- 8:30 Never Mwambela, Thomas Dubois, Srinivasan Ramasamy. Effect of entomopathogenic fungus, *Metarhizium anisopliae* on South American tomato leafminer, *Tuta absoluta* (Meyrick), in the field in Tanzania
- 8:45 Guoxiong Peng, Deyu Zeng, Mingsheng Hong, Yuxian Xia. Successful mass production and application of *Metarhizium anisopliae* for rice pest control during the full growing season
- 9:00 Ji hee Han, Jeong Jun Kim, Sang Yeop Lee. Characterization of entomopathogenic fungi for microbial control of *Spodoptera exigua*
- 9:15 Maximilian Paluch, Joschua Göttmann, Dietrich Stephan. Comparison of different formulations of *Beauveria brongniartii* for control of white grubs of *Melolontha melolontha* in apple orchards
- 9:30 Waqas Wakil, Muhammad Yasin. Combined effect of *Beauveria bassiana* and *Heterorhabditis bacteriophora* against *Rhynchophorus ferrugineus* (Olivier)
- 9:45 Muhammad Yasin, Waqas Wakil. Infection of invasive red palm weevil by endophytic *Beauveria bassiana* colonizing date palm in combination with *Bacillus thuringiensis*

WEDNESDAY, 8:00 – 10:00 pm

Fungi Division – Business meeting (*Village West, Building 2, Rooms 2A/2B*)

Microsporidia Division – Business meeting / Workshop (*Village West, Building 2, Room 2C*)

Workshop: Charles Vossbrinck. The Microsporidia as Eukaryotes

Virus Division – Business meeting and tribute to Michael R Strand's election to the US National Academy of Sciences
 Organizer: Elisabeth Herniou
 Vote of Thanks by Peter Krell
 Response by Michael Strand
 (*Village Tower West, 15th Floor, 15B*)

THURSDAY, 8:00 – 10:00 am

Theater

BACTERIA DIVISION SYMPOSIUM

What is Bt? Current perspectives

Organizer and Moderator: Neil Crickmore

- 8:00 Neil Crickmore. Challenges in understanding the biology of Bt
- 8:25 Daniel R. Zeigler. *Bacillus thuringiensis*: A constellation of toxins
- 9:00 Ben Raymond, Guillaume Meric, Jinshui Zheng, Donghai Peng, Ben Pascoe, Ming Sun, Samuel K. Sheppard. A genomic perspective on the definition, evolution and phylogenetics of *Bacillus thuringiensis*
- 9:45 General discussion

Roosevelt Room

DISEASES OF BENEFICIAL INVERTEBRATES SYMPOSIUM

The Pathobiome Concept: An emerging view of microbes and diseases

Organizers and Moderators: David Bass, Helen Hesketh

- 8:00 David Bass, Ronny van Aerle, Lydia Doherty, Jamie Bojko, Dominique Chaput, Grant Stentiford. The pathobiome concept: An emerging view of microbes and disease
- 8:30 Ronny van Aerle. Characterization of pathobiomes using high-throughput sequencing: Challenges and opportunities
- 9:00 Nancy A. Moran. Effects of the gut microbiota on susceptibility to pathogens in social bees
- 9:30 JP Dundore-Arias, Linda L. Kinkel. Competitive interactions and disease suppression in soil microbiomes

10:00–10:30 am Coffee Break

THURSDAY, 10:30 am – 12:30 pm

Theater

Society for Invertebrate Pathology Annual Business Meeting

J. Jehle, President, SIP

THURSDAY pm

THURSDAY, 12:30 – 1:30 pm LUNCH BREAK

Awards Committee member lunch (*Green Room*)

Monique van Oers, Chair

THURSDAY, 1:30 – 3:30 pm

Theater

FUNGI, NEMATODES, AND MICROSPORIDIA ***CROSS-DIVISIONAL SYMPOSIUM***

Ecology of Invertebrate Pathogens

Organizers: David Shapiro-Ilan, Ann E. Hajek

- 1:30 Nicolai Meyling, Ann Hajek. Interaction networks of invertebrate pathogenic fungi: Ecological consequences of multifunctional lifestyles and community diversity
- 1:50 Edwin Lewis, Ivan Hiltbold, David Shapiro-Ilan. Dispersal, dispersion and disruption: Where and why entomopathogenic nematodes move.
- 2:10 Leellen Solter, Gernot Hoch. The ecology of microsporidia - a balancing act between minimizing host damage and maximizing pathogen reproduction and transmission
- 2:30 Trevor Jackson, Colin Berry, Maureen O'Callaghan. The hidden ecology of bacterial entomopathogens
- 2:50 Madoka Nakai, Trevor Williams. Ecology of insect viruses: how viruses adapt to their insect host populations
- 3:10 Colleen Burge, Natalie Rivlin, Amanda Shore-Maggio. Ecology of emerging infectious diseases of invertebrates

The Forum

MICROBIAL CONTROL DIVISION SYMPOSIUM

Biopesticides III: Beyond entomopathogenicity - Reliable tools or just a novelty?

Organizers and Moderators: Roma Gwynn, Travis Glare,
Michael Brownbridge

- 1:30 Michael Brownbridge. Biopesticides III - The final chapter?
- 2:00 Travis R. Glare, Federico Rivas, Aimee C. McKinnon, Maya Raad, Maria E. Moran-Diez, Michael Rostás. Plant associations of *Metarhizium* and *Beauveria*
- 2:30 Edith Ladurner, Massimo Benuzzi, Sergio Franceschini, Francesco Greco. *Beauveria bassiana* strain ATCC 74040 – does the understanding of its endophytic activity affect its use as a biocontrol agent?
- 3:00 Roma Gwynn. Approaches for the commercialisation of plant colonising microorganism: the importance of educating the gatekeepers
- 3:30 Reed N. Royalty, Dilara Ally, Magalie Guilhabert. Plant microbe interactions, microbial solutions for invertebrate pests, and crop yield: Current and future focus of the crop protection industry

Roosevelt Room

Virus Division #5

Moderators: Nor Chejanovsky, Ryosuke Fujita

- 1:30 Nor Chejanovsky, Sofia Levin, Noa Sela. New viruses exclusive to the honey bee pathogen mite *Varroa destructor*
- 1:45 Charlotte Pushparajan, Juan Daniel Claus, Gabriel Alberto Visnovsky. A microcarrier-based process for production of the *Oryctes nudivirus* in spinner-flask bioreactors

- 2:00 Haidong Wang, Guy Smagghe and Ivan Meeus. Vago-like gene, BtSVC is involved in antiviral immune responses and antimicrobial peptides (AMPs) expression in bumblebee *Bombus terrestris*
- 2:15 Beibei Li, Shuai Deng, Fei Li, Qingyun Diao, Chunsheng Hou. Pesticide enhance the level of chronic bee paralysis virus
- 2:30 Ryosuke Fujita, Fumihiko Kato, Shigeru Tajima, Masayuki Saijo, Haruhiko Isawa, Kyoko Sawabe. Shinobi tetravirus and Kunoichi rhabdovirus, latent viruses in mosquito cultured cell line, suppress multiplication of arboviruses
- 2:45 Lionel Galibert, Adrien Savy, Yohann Dickx, Delphine Bonnin, Bérange Bertin, Isidore Mushimiyimana, Aurélien Jacob, Marjorie Boutin-Fontaine, Monique M. van Oers, Philippe Moullier, Fulvio Mavilio, Otto-W. Merten. Origin of supplementary capsid proteins in different AAV serotypes produced with the baculovirus/insect cell expression system
- 3:00 ELSahly N, Salem TZ. A challenge of constructing insect/mammalian shuttle vector using two constitutive virus-based promoters
- 3:15 Tzong-Yuan Wu, Chun-Chung Chen, Ming-Kun Liu. Using recombinant baculovirus AcMNPV as a safe drug finding platform
- 3:30 Chuanfei Yuan, Longsheng Xing, Manli Wang, Xi Wang Mengyi Yin, Qianran Wang, Zhihong Hu, Zhen Zou. Inhibition of melanization by serpin-5 and -9 promotes nucleopolyhedrovirus infection in *Helicoverpa armigera*

THURSDAY, 6:30 pm – 12:30 am

Estancia La Jolla Hotel

- 6:30 Cocktail Hour
- 7:30 Banquet
Awards Ceremony
Live Band and Dancing

The Estancia La Jolla Hotel is an approximately 15 minute walk from the Village (about the same distance as to the Price Center).

A shuttle will circle between the Village and the banquet starting at 6:15 from the Village.

Return shuttles from the banquet to the Village will run as needed, starting at about 9 pm.

The last bus leaves the banquet site at 12:30 am.

**We look forward to seeing you at the
51st Annual Meeting of the SIP!**

**12–16 August 2018
Gold Coast, Australia**

Contact: Caroline Hauxwell
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