

Program

SIP 2006

**Society for Invertebrate Pathology 39<sup>th</sup> Annual Meeting  
Wuhan-China-August 27 to September 1, 2006**

**PROGRAM**

**Sunday, August 27**

8:30-17:00 **SIP Council Meeting** *Jinxiu Meeting Room*

10:00-21:00 **Registration** *Hotel Lobby*

10:00-21:00 **Loading up presentations** *Hotel Lobby*

19:00-21:00 **Mixer** *Haitiangong Dining-Room*

**Monday, August 28**

8:00-10:00 **Registration** *Hotel Lobby*

8:30-10:00 **Opening Ceremony** *Yangchun Hall*

**Welcome:** Zhiniu Yu, SIP 2006 Chairman  
Just M. Vlák, SIP President  
Leader of Wuhan and Hubei province / President of Huazhong Agriculture University

**Founders' Lecture:** Chair: Dudley Pinnock  
Honoree-Dr. Shangying Gao  
Lecturer- Dr. Just M. Vlák

10:00-10:30 **Coffee Break**

**10:30-12:30 Monday Yangchun Hall**

**Plenary Lectures: Microbial control in Asia**  
**Chair: Wendy Gelernter**

10:30 Microbial control and biotechnology research on *Bacillus thuringiensis* (Bt) in China. **Da-Fang Huang**. Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing 100081, China

11:00 Microbial control in Japan. **Yasuhisa Kunimi**. Department of Bioregulation and Biointeraction, Graduate School of Agriculture, Tokyo University of Agriculture and Technology, Saiwai, Fuchu, Tokyo 183-8509, Japan

11:30 Microbial control in South East Asia. **Ole Skovmand**. Intelligent Insect Control, 118 Ch Alouettes, 34170 Castelnau le Lez, France

12:00 Fungal biocontrol agents for arthropod pest

control in India & Pakistan. **Tariq M Butt<sup>2</sup>, Len Copping<sup>1</sup>**. <sup>1</sup>Department of Biological Sciences, University of Wales, Swansea, SA2 8PP, UK; <sup>2</sup>LGC Consultants, Saffron Walden, Essex, CB11 4EG, UK

12:30-14:00 Monday **Lunch** *Yangchun Hall*  
**Setting up Posters** *Meeting Center*

**14:00-16:00 Monday Meeting Center**

**Symposium: Monitoring and managing for Bt-resistance: The challenges for the next decade (Cross-Divisional)**

**Convenors: Juan Ferre and Carlos Blanco**

14:00 Resistance monitoring for Bt crops: A US EPA perspective. **John A Glaser<sup>2</sup>, Sharlene R Matten<sup>1</sup>**. <sup>1</sup>United States Environmental Protection Agency, Office of Pesticide Programs, Biopesticides and Pollution Prevention Division (7511C), 1200 Pennsylvania Ave., NW, Washington D.C. 20460; <sup>2</sup>United States Environmental Protection Agency, Office of Research & Development, National Risk Management Research Laboratory, Sustainable Technology Division, 26 W King Dr. Cincinnati, Ohio 45268

14:17 Monitoring pests of large geographies: How to get the best information when two countries are involved? **Carlos A. Blanco<sup>1</sup>, Antonio P. Terán-Vargas<sup>2</sup>, Craig Abel<sup>1</sup> and Omaththage P. Perera<sup>1</sup>**. <sup>1</sup>USDA - Agricultural Research Service, 141 Experiment Station Road, Stoneville, Mississippi, 38776, U.S.A.; <sup>2</sup>INIFAP, CESTAM, Km. 55 Carretera Tampico-Mante, Cuahtemoc, Tamaulipas, 89610, Mexico

14:34 Monitoring and Management Strategy of *Helicoverpa armigera* Resistance to Bt Cotton in China. **Kongming Wu**. State Key Laboratory for Biology of Plant Diseases of Insect Pests, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, 100094 China.

14:51 What is the current situation in Australia for resistance to Bt cotton by *Helicoverpa armigera*? **Sharon Joy Downes<sup>1</sup>, Rod Mahon<sup>2</sup>**. <sup>1</sup>CSIRO Entomology, Australian Cotton Research Institute, Locked Bag 59,

- Narrabri, NSW 2390, Australia; <sup>2</sup>CSIRO Entomology, PO Box 1600, Canberra, ACT 2601, Australia
- 15:08 Insect Baseline susceptibilities to Bt Cry toxins and the Bt resistance management in India. **Govind T Gujar, V. Kalia, A. Kumari, B.P. Singh, R. Nair and A. Mittal.** Division of Entomology, Indian Agricultural Research Institute, New Delhi 110012, India
- 15:25 Monsanto's global approach to resistance monitoring. **Graham P Head, Sakuntala Sivasupramaniam, Vaughn T Ty.** Monsanto Company, 700 Chesterfield Parkway West, Chesterfield, MO 63017
- 15:42 Effective IRM for the novel insect-control cotton, VipCot™. **Ryan W. Kurtz.** Syngenta Biotechnology, Inc., 3054 E. Cornwallis Rd. RTP, NC 27709 USA
- 14:00-16:00 Monday Multifunctional Hall Symposium: Diseases of aquatic invertebrates (Virus Division) Convenors: Zhengli Shi and Just M. Vlak**
- 14:00 Viral diseases of aquatic invertebrates: Introduction to the theme. **Just M. Vlak.** Laboratory of Virology, Wageningen University, Binnenhaven11, 6709 PD Wageningen, The Netherlands
- 14:15 Biology, genetics and ecology of taura syndrome virus. **Jeffrey M. Lotz.** Department of Coastal Sciences, Gulf Coast Research Laboratory, University of Southern Mississippi, Ocean Springs, Mississippi 39564, USA
- 14:45 Biology, genetics and ecology of the YHV complex. **Jeff A. Cowley<sup>2</sup>, Peter J. Walker<sup>1,2</sup> and Priyanjalie Wijegoonawardane<sup>2</sup>**  
<sup>1</sup>CSIRO Livestock Industries, Australian Animal Health Laboratory, Geelong, Victoria 3220 Australia; <sup>2</sup>CSIRO Livestock Industries, Queensland Bioscience Precinct, St Lucia, Queensland 4067, Australia.
- 15:15 Biology and molecular genetics of white spot syndrome virus. **Zhengli Shi.** State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan 430071, P.R. China
- 14:00-16:00 Monday Nanyuan Meeting Room Contributed Papers: Fungi 1 Moderators: Michael Brownbridge and Zengzhi Li**
- 14:00 Population dynamics of *Beauveria bassiana* introduced in forest and fresh water. **Bin WANG<sup>1,2</sup>, Zengzhi LI<sup>1</sup>, Mitsuaki SHIMAZU<sup>2</sup>, Meizhen FAN<sup>1</sup> and Fan PENG<sup>1</sup>.** <sup>1</sup>Anhui Provincial Key Laboratory of Microbial Control, Anhui Agricultural University, Hefei 230036, Anhui, P. R. China; <sup>2</sup> Department of Forest Entomology, Forestry and Forest Products Research Institute, 1 Matsunosato, Tsucuba, Ibaraki 305-8687, Japan
- 14:15 Survival of *Beauveria caledonica* spores in biopolymer-based formulations for control of the *Hylastes ater* (Coleoptera: Scolytidae). **Michael Brownbridge<sup>1</sup>, Tracey N Nelson<sup>1</sup>, Steven D Reay<sup>2</sup>, Jyanthi Swaminathan<sup>1</sup> and Travis R Glare<sup>1</sup>.** <sup>1</sup>AgResearch Ltd., Biocontrol & Biosecurity, AgResearch, PO Box 60, Lincoln, New Zealand; <sup>2</sup>Silver Bullet Forest Research, Silver Bullet Forest Research, Auckland, New Zealand
- 14:30 Winter survival and germination of aphid-pathogenic Entomophthorales. **Charlotte Nielsen<sup>1</sup>, Anselme Fournier<sup>2</sup>, Annette B. Jensen<sup>1</sup>, Jürg Enkerli<sup>2</sup>, Franco Widmer<sup>2</sup> and Jørgen Eilenberg<sup>2</sup>.** <sup>1</sup>The Royal Veterinary and Agricultural University, Department of Ecology, Thorvaldsensvej 40, 1871 Frederiksberg C., Denmark; <sup>2</sup>Agroscope FAL Reckenholz, Swiss Federal Research Station for Agroecology and Agriculture, Reckenholzstrasse 191, CH-8046 Zürich, Switzerland
- 14:45 Disease transmission and chalkbrood control in the alfalfa leafcutting bee. **Rosalind R. James.** USDA-ARS Bee Biology & Systematics Lab, Dept Biol UMC 5310, Utah State Univ., Logan, UT 84333-5310
- 15:00 Host range of a fungus associated with epizootic in elongate hemlock scale. **Jose Marcelino, Rosanna Giordano, Svetlana Gouli and Vladimir Gouli.** Entomology Research Laboratory, University of Vermont, 661 Spear St., Burlington, Vermont 05405-0105, USA
- 15:15 **STU** Effects of combining the fiber bands impregnated with *Beauveria bassiana* cultures with attractants for control of *Monochamus alternatus* Hope. **Sibao Wang<sup>1,2</sup>, Yongping Huang<sup>2</sup>, Meizhen Fan<sup>1</sup> and Zengzhi Li<sup>1</sup>.** <sup>1</sup>Provincial Key Laboratory of Microbial Pest Control, Anhui Agricultural University, Hefei,

- Anhui 230036, P.R. China; <sup>2</sup>Institute of Plant Physiology and Ecology, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, 300 Fenglin Road, Shanghai 200032, P.R. China
- 15:30 **STU** Relationship of trehalose and polyol accumulation to increased conidial heat and UV-B tolerance in *Metarhizium anisopliae* conidia produced under sub-lethal stresses. **Drauzio E.N. Rangel, Anne J. Anderson and Donald W. Roberts.** Department of Biology, Utah State University, 5305, Old Main Hill, Logan, UT. 84322-5305 USA
- 14:00-16:00 Monday Xiyuan Meeting Room**  
**Contributed Papers: Nematodes**  
**Moderators: Patricia Stock and Mike Wilson**
- 14:00 Field evaluation of *Heterorhabditis indica* with entomopathogens and botanicals against *Helicoverpa armigera* (Hübner). **Aralimarad Prabhuraj, Patil B.V., Girish K.S. and Shivaleela.** Department of Entomology, College of Agriculture, Raichur 584 101, Karnataka, India
- 14:15 Performance of *Heterorhabditis indica* with neem against *Helicoverpa armigera* (Hübner) (Lepidoptera: Noctuidae). **Aralimarad Prabhuraj, Patil B.V., Girish K.S. and Shivaleela.** Department of Entomology, College of Agriculture, Raichur 584 101, Karnataka, India
- 14:30 A new entomopathogenic nematode, *Steinernema hebeiense* sp. n. (Rhabditida: Steinernematidae), from North China. **Shulong Chen<sup>1</sup>, Xiuhua Li<sup>1</sup>, Aihua Yan<sup>1</sup>, Sergei E. Spiridonov<sup>2</sup> and Maurice Moens<sup>3</sup>.** <sup>1</sup>Institute of Plant Protection, Hebei Academy of Agricultural and Forestry Sciences, Dong Guan Street 437, Baoding, Hebei, 071000, China; <sup>2</sup>Institute of Parasitology, Russian Academy of Sciences, Leninskii prospekt, 33, Moscow, 119071, Russia; <sup>3</sup>Agricultural Research Centre, Burg. Van Gansberghelaan, 96, 9820 Merelbeke, Belgium
- 14:45 A Comparative Study on the Morphology and Ultrastructure of the Bacterial Receptacle in *Steinernema* Nematodes. **S. Patricia Stock<sup>1</sup> and Yolanda Flores-Lara<sup>1,2</sup>.** <sup>1</sup>Department of Entomology, University of Arizona, Forbes 410. 1140 E South Campus Dr. Tucson AZ 85721-0036, USA; <sup>2</sup>Universidad de Sonora, Unidad Santa Ana, Santa Ana, Estado de Sonora, Mexico
- 15:00 The indigenous Peruvian entomopathogenic nematode and the Andean potato weevil. **Harry K. Kava<sup>1</sup>, Soroush Parsa<sup>1</sup> and Jesus Alcázar<sup>2</sup>.** <sup>1</sup>Department of Nematology, University of California, Davis, California 95616 USA; <sup>2</sup>International Potato Center, Lima 12, Peru
- 15:15 Molecular characterization of the symbiotic bacteria of entomopathogenic nematodes isolated from China. **Li hong Qiu, Shao ming Peng, Lian lian Liu and Yi Pang.** State Key Laboratory of Biocontrol, Sun Yat-sen (Zhongshan) University, 135 Xin Gang Road, Guangzhou, Guangdong 510275, China
- 15:30 **STU** Effectiveness of entomopathogenic nematodes in the control of oilseed rape pests in Finland. **Melita Zec-Vojinovic, Heikki M.T. Hokkanen and Ingeborg Menzler-Hokkanen.** University of Helsinki, Box 27, FIN-00014, Helsinki, Finland.
- 16:00-16:30 **Coffee Break**  
**Setting up posters Meeting Center**
- 16:30-18:30 Monday Meeting Center**  
**Poster Session I**  
**Bacteria I**
- BP1 Cytocidal actions of parasporin-2, an antitumoral crystal protein targeting mammalian cells from *Bacillus thuringiensis* A1547. **Sakae Kitada<sup>1</sup>, Yuichi Abe<sup>1</sup>, Hiroyasu Shimada<sup>1</sup>, Osamu Kuge<sup>1</sup>, Eiichi Mizuki<sup>2</sup>, Michio Ohba<sup>3</sup> and Akio Ito<sup>1</sup>.** <sup>1</sup>Faculty of Science, Kyushu University, Fukuoka 812-8581, Japan; <sup>2</sup>Faculty of Agriculture, Kyushu University, Fukuoka 812-8581, Japan; <sup>3</sup>Biotechnology and Food Research Institute, Fukuoka Industrial Technology Center, Fukuoka 839-0861, Japan
- BP2 Parasporin-2, an oligomerizing and pore-forming toxin from *Bacillus thuringiensis*, is assembled into supramolecular complexes in target human cell membranes. **Hiroyasu Shimada, Yuichi Abe, Osamu Kuge and Sakae Kitada.** Department of Chemistry, Faculty of Science, Kyushu University, Fukuoka 812-8581, Japan
- BP3 GPI-anchored proteins are involved in the cytotoxic actions of parasporin-2, a mammalian cell-targeting crystal protein from *Bacillus*

- thuringiensis* A1547. **Yuichi Abe<sup>1</sup>, Hiroshi Inoue<sup>1</sup>, Hiroyasu Shimada<sup>1</sup>, Michio Ohba<sup>2</sup>, Hisashi Ashida<sup>3</sup>, Taroh Kinoshita<sup>3</sup>, Osamu Kuge<sup>1</sup> and Sakae Kitada<sup>1</sup>.** <sup>1</sup>Department of Chemistry, Faculty of Science, Kyushu University, Fukuoka 812-8581, Japan; <sup>2</sup>Department of Applied Genetics and Pest Management, Faculty of Agriculture, Kyushu University, Fukuoka 812-8581, Japan; <sup>3</sup>Research Institute for Microbial Diseases, Osaka University, Suita, Osaka 565-0871, Japan
- BP4 Baseline susceptibility to the Cry 1Ac protein and validation of diagnostic concentration in Indian populations of eggplant fruit and shoot borer. **Dattatray K Shirale, Srinivas Parimi and Usha B Zehr.** Maharashtra Hybrid Seeds Company Limited, PO Box 76, Jalna-Aurangabad Road, JALNA-431203, INDIA
- BP5 Rear *Anomala corpulenta* (Coleoptera: Scarabaeidae) and bioassay of insecticidal activity of *Bacillus thuringiensis* against its larvae. **Rong-yan Wang, Jin-yao Wang, Shu-liang Feng, Wei-ping Cao, Li-xin Du, Jian Song and Rui-hua Wu.** Feng Shu-liang, Institute of Plant Protection, Hebei Academy of Agricultural and forestry Sciences, Baoding 071000, China
- BP6 Studies on the Use of Three *Bacillus* Species Against The Date Palm Fruit Stalk Borer , *Oryctes elegans* (Coleoptera: Scarabaeidae). **Mohammad Abdulaziz Al-Doghairi.** Qassim University, College of Agriculture and Veterinary Medicine, Qassim University, Buraydah P.O. Box 1482, Saudi Arabia
- BP7 Identification of a novel *Bacillus thuringiensis* strain WZ-9. **Ping Song, Huixian Wu, Wenjie Mao, Xudong Su and Qinying Wang.** College of Plant Protection, Agricultural University of Hebei, Biocontrol Centre of Plant Diseases and Plant Pests of Hebei Province, Baoding, Hebei 071001, P. R. China
- BP8 Binding analysis in Cry1Ac-selected populations of *Helicoverpa zea* (Boddie) (Lepidoptera: Noctuidae). **Ana Rodrigo<sup>1</sup>, Konasale J. Anilkumar<sup>2</sup>, William J. Moar<sup>2</sup> and Juan Ferré<sup>1</sup>.** <sup>1</sup>Departamento de Genética, Universidad de Valencia, Dr. Moliner 50, 46100 Burjassot (Valencia). SPAIN; <sup>2</sup>Department of Entomology and Plant Pathology, Auburn University, Auburn, AL-36849, U.S.A
- BP9 Mode of action of *Bacillus thuringiensis* toxins active against *Sesamia nonagrioides* (Lefebvre). **J. González-Cabrera<sup>1</sup>, G. P. Farinós<sup>2</sup>, S. Caccia<sup>3</sup>, M. Díaz-Mendoza<sup>2</sup>, P. Castañera<sup>2</sup>, M. G. Leonardi<sup>3</sup>, B. Giordana<sup>3</sup> and J. Ferré<sup>1</sup>.** <sup>1</sup>Dep. Genética, Universidad de Valencia, 46100-Burjassot, Spain; <sup>2</sup>Dep. Biología de Plantas, Centro de Investigaciones Biológicas - C.S.I.C., Madrid, Spain.; <sup>3</sup>Dipart. Biologia, Università degli Studi di Milano, Milano, Italy
- BP10 Antibody blocking of putative receptors inhibits the binding of Cry1Ab in *Bombyx mori*. **M. Sales Ibiza-Palacios<sup>1</sup>, Satoshi Higurashi<sup>2</sup>, Kazuhisa Miyamoto<sup>3</sup>, Ryoichi Sato<sup>2</sup> and Baltasar Escriche<sup>1</sup>.** <sup>1</sup>Dep. Genética, Universitat de València, 46100 Burjassot, Spain; <sup>2</sup>Grad. School of Bio-Applications and Syst. Eng., Tokyo University of Agr. and Tech., Tokyo 184-8588, Japan; <sup>3</sup>Inst. Insect and Animal Sciences, Natl. Inst. Agrobiol. Sci., Tsukuba Ibaraki 305-8634, Japan
- BP11 Effect of Cyt1A yield reduction on *Bacillus sphaericus* Bin toxin synthesis in *Bacillus thuringiensis*. **Yuko Sakano<sup>1</sup>, Hyun-Woo Park<sup>3</sup> and Brian A Federici<sup>1,2</sup>.** <sup>1</sup>Department of Entomology, University of California Riverside, Riverside, California 92521, USA; <sup>2</sup>Graduate Program in Genetics, University of California Riverside, Riverside, California 92521, USA; <sup>3</sup>Public Health Research & Education Center, Florida A & M University, Panama City, Florida 32405, USA
- BP12 A Novel Lysogenic Bacteriophage MZTP02 from *Bacillus thuringiensis* Strain MZ1. **Wei Liao<sup>1,2</sup>, Shaoyun Song<sup>1</sup>, Fan Sun<sup>1</sup>, Kai Yang<sup>1</sup>, Yuncan Ai<sup>1</sup> and Yi Pang<sup>1</sup>.** <sup>1</sup>State Key Laboratory of Biocontrol, School of life Science, Sun Yat-sen (Zhongshan) University, Guangzhou, Guangdong, 510275, P. R. China; <sup>2</sup>Guangxi Vocational Technology College, Nanning, Guangxi, 530226, P. R. China
- BP13 What is the mechanism of resistance to *Bacillus thuringiensis* toxin Cry1Ac in a greenhouse population of cabbage looper, *Trichoplusia ni*? **Ping Wang<sup>1</sup>, Jian-zhou Zhao<sup>1</sup>, Ana Rodrigo-Simón<sup>2</sup>, Wendy C. Kain<sup>1</sup>, Alida F. Janmaat<sup>3</sup>, Anthony M. Shelton<sup>1</sup>, Juan Ferré<sup>2</sup> and Judith Myers<sup>3</sup>.** <sup>1</sup>Department of Entomology, Cornell University, New York State Agricultural Experiment Station, Geneva, NY 14456, USA; <sup>2</sup>Department of Genetics, University of Valencia, Dr. Moliner 50, 46100 Burjassot (Valencia), Spain; <sup>3</sup>Department of Zoology, University of British

Columbia, Vancouver, British Columbia, V6T 1Z4, Canada

BP14 **STU** An approach to the directed evolution of the insecticidal protein from *Bacillus thuringiensis*. **Yasushi Hoshino, Horoshi Ishikawa, Kozue Chayahara, Chinatsu Morimoto, Mika Kitajima and Ryoichi Sato.** Graduate School of Bio-Applications and Systems Engineering, Tokyo University of Agriculture and Technology, Koganei, Tokyo 184-8588, Japan

BP15 **STU** *Bacillus thuringiensis* Cry toxin's domain III, Galactose-binding Domain-like binds specifically to various proteins. **Madoka Kitami, Kazuko Nakanishi, Shogo Atsumi, Fumiaki Obata and Ryoichi Sato.** Graduate School of Bio-Application and Systems Engineering, Tokyo University of Agriculture and Technology, Naka-cho 2-24-16, Koganei, Tokyo 184-8588, Japan

BP16 **STU** Polymorphism of Fatty Acid from *Ralstonia solanacearum* and Its Classificatory Application on Subspecies. **QiuHong Wang<sup>1</sup>, Liang Chen<sup>1</sup>, YingZhi Lin<sup>2</sup>, SuFang Huang<sup>2</sup> and Bo Liu<sup>2\*</sup>.** <sup>1</sup>Academy of Life Sciences, Xiamen University, Xiamen 361005, China; <sup>2</sup>Biotechnology Institute, Fujian Academy of Agricultural Sciences, Fuzhou 350003, China

BP17 **STU** Insecticidal Toxicology of HBF-1 Strain from *Bacillus thuringiensis* on *Anomala corpulenta* and *A. exoleta* larvae. **Jian Song, Shu-liang Feng, Rong-yan Wang, Jin-yao Wang, Wei-ping Cao, Li-xin Du, Jie Zhang and Fu-ping Song.** Feng Shu-liang. Institute of Plant Protection, Hebei Academy of Agricultural And Forestry Sciences1, Baoding 071000

### **Fungi I**

FP1 Reduction of feeding by the Japanese pine sawyer, *Monochamus alternatus* infected with *Beauveria bassiana*. **Mitsuaki Shimazu, Noritoshi Maehara and Xueyou He.** Forestry and Forest Products Research Institute, Tsukuba, Ibaraki 305-8687, JAPAN

FP2 Research on Cordyceps and its application in AHAU. **Chun-Ru Li<sup>1</sup>, Bo Huang<sup>1</sup>, Feng-Lin Hu<sup>1</sup>, Sung-Hee Nam<sup>1,2</sup>, Mei-Zhen Fan<sup>1</sup> and Zeng-Zhi Li<sup>1</sup>.** <sup>1</sup>Anhui Agricultural University, Anhui Provincial Key Laboratory for Microbial Control, Anhui Agricultural University, Hefei, Anhui, PR China; <sup>2</sup>National Institute of

Agricultural Science and Technology, National Institute of Agricultural Science and Technology, Rural Development Administration, Suwon, Korea

FP3 **STU** Thermotolerance and cold activity of sixty *Beauveria* spp. isolates. **Everton K.K. Fernandes<sup>1,2</sup>, Drauzio E.N. Rangel<sup>1</sup>, Vania R.E.P. Bittencourt<sup>2</sup>, Aurea M.L. Moraes<sup>2</sup> and Donald W. Roberts<sup>1</sup>.** <sup>1</sup>Department of Biology, Utah State University, 5305 Old Main Hill, Logan, UT 84322-5305, USA.; <sup>2</sup>Departamento de Parasitologia Animal, Universidade Federal Rural do Rio de Janeiro, Rio de Janeiro, Brasil

FP4 Evaluation of *Beauveria bassiana* for the control of glassy-winged sharpshooter, *Homalodisca coagulata* (Homoptera: Cicadellidae). **Surendra K Dara<sup>1</sup>, Michael R McGuire<sup>2</sup> and Harry K Kaya<sup>3</sup>.** <sup>1</sup>Shafter Research and Extension Center, University of California, Davis, 17053 N Shafter Ave, Shafter, CA 93263; <sup>2</sup>USDA-ARS, 17053 N Shafter Ave, Shafter, CA 93263; <sup>3</sup>Department of Nematology, University of California, One Shields Ave, Davis, CA 95616

FP5 **STU** Is isolate ARSEF 3609 a *Metarhizium anisopliae* var. *anisopliae* or var. *acridum*? **Everton K.K. Fernandes, Drauzio E.N. Rangel, John Orwin, Mark P. Miller and Donald W. Roberts.** Department of Biology, Utah State University, 5305 Old Main Hill, Logan, UT 84322-5305, USA

FP6 **STU** Biological control of soybean cyst nematode using *Verticillium lecanii* (*Lecanicillium* spp.) and fungi isolated from cyst. **Ai Watanabe, Daigo Aiuchi, Ryoji Shinya and Masanori Koike.** Department Agro-environmental Science, Obihiro University of Agriculture and Veterinary Medicine, Hokkaido 0808555, Japan

FP7 **STU** Evaluation of pathogenicity against cotton aphid and greenhouse whitefly, and viability on the leaf to use hybrid strains of *Verticillium lecanii*. **Daigo Aiuchi, Yukiko Baba, Sayaka Horie, Keigo Inami, Katuhisa Kuramochi, Masayuki Tani and Masanori Koike.** Department of Agro-environmental Science, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, 080-8555, Japan

FP8 **STU** Thermotolerance of germlings and mycelium of *Metarhizium anisopliae* var.

*anisopliae* and *acridum*. **Drauzio E.N. Rangel, Everton K.K. Fernandes, Seth J. Dettenmaier and Donald W. Roberts.** Department of Biology, Utah State University, 5305 Old Main Hill, Logan, UT 84322-5305, USA

FP9 Efficiency of aerial conidia and submerged propagules of *Paecilomyces fumosoroseus* (Wise) Brown and Smith against *Bemisia* (Gennadius) spp nymphs in laboratory. **A. G. Osuna Paez<sup>1</sup>, R. Castro Montoya<sup>2</sup> and H. M. Cárdenas Cota<sup>3</sup>.** <sup>1</sup>Consejo Estatal de Ciencia y Tecnología, Avenida Insurgentes s/n Centro. CP 80129, Unidad Administrativa del Gobierno del Estado de Sinaloa. Culiacán, Sinaloa, México; <sup>2</sup>Universidad Autónoma de Sinaloa, Escuela de Ciencias Físico Matemáticas, Ciudad Universitaria. Culiacán, Sinaloa, México; <sup>3</sup>Centro de Ciencias de Sinaloa, Avenida de las Américas No. 2771 CP 80010. Culiacán, Sinaloa, México

FP10 **STU** Efficacy of *Beauveria bassiana* (Bals.) Vuill. against the tarnished plant bug, *Lygus lineolaris* L., in strawberry field. **Rachid Sabbahi and Claude Guertin.** INRS-Institut Armand Frappier, Laboratoire de recherches sur les entomopathogènes, 531 boul. des Prairies, Laval (Québec) H7V 1B7 Canada

### Microbial Control I

MCP1 The resistance of *Anopheles sinensis* from southern and central China to *Bacillus thuringiensis* subsp. *israelensis*. **Hongyu Zhang, Jingye Huang and Lin Lü.** Institute of Urban Pest, College of Plant Science and Technology, Huazhong Agricultural University, Wuhan 430070, The People's Republic of China

MCP2 Characterization and toxicity to coleopteran insects of *Bacillus thuringiensis* isolates from warehouses. **Hongyu Zhang<sup>1,2</sup> and Ziniu Yu<sup>2</sup>.** <sup>1</sup>Institute of Urban Pest, College of Plant Science and Technology, Huazhong Agricultural University, Wuhan 430070, The People's Republic of China; <sup>2</sup>National key laboratories of Agri-microbiology, Wuhan 430070, The People's Republic of China

MCP3 Susceptibility of *Pyrausta sticticalis* to *Bacillus thuringiensis*-based formulations depending on host plant. **Margarita Shternshis, Irina Andreeva and Bibinur Baitasova.** State Agrarian University, Dobrolubov 160, Novosibirsk, 630039, Russia

MCP4 Diagnosis of Arthropod Diseases – Since more than 50 years in the “Institute for **Biological Control**” of the “Federal Biological Research Centre for Agriculture and Forestry”. **Regina G. Kleespies, Alois M. Huger and Gisbert Zimmermann.** Federal Biological Research Centre for Agriculture and Forestry, Institute for Biological Control,, Heinrichstr. 243, D-64287 Darmstadt, Germany

MCP5 Inheritance of Resistance and Effect of PM on Toxicity of *Bacillus thuringiensis* toxin Cry1Ac in Cabbage looper, *Trichoplusia ni*. **Wei Guo<sup>1,2</sup>, Guoxun Li<sup>3</sup> and Ping Wang<sup>2</sup>.** <sup>1</sup>Agricultural University of Hebei, Biocontrol Center of Plant Diseases and Pests of Hebei, Baoding, Hebei 071001, P. R. of China; <sup>2</sup>Department of Entomology, Cornell University, New York State Agricultural Experiment Station, Geneva, NY 14456, USA; <sup>3</sup>College of Plant Protection, Laiyang Agricultural University, Qingdao, Shandong 266109, China

MCP6 Analysis of midgut ESTs from *Costelytra zealandica* to identify candidate genes involved in amber disease. **Sean DG Marshall<sup>1</sup>, Laurence N Gatehouse<sup>2</sup>, S Anette Becher<sup>3</sup>, Drion G Boucias<sup>4</sup>, Mark RH Hurst<sup>1</sup>, Darren J Smalley<sup>1</sup> and Trevor A Jackson<sup>1</sup>.** <sup>1</sup>Biocontrol and Biosecurity, AgResearch, PO Box 60, Lincoln, New Zealand; <sup>2</sup>Insect Science, HortResearch, Private Bag 11030, Palmerston North, New Zealand; <sup>3</sup>Bioinformatics, Maths and Statistics, AgResearch, Private Bag 50034, Mosgiel, New Zealand; <sup>4</sup>Department of Entomology and Nematology, University of Florida, Gainesville, Florida 32611

MCP7 Biotic and abiotic factors affecting performance of *Serratia entomophila* as a biopesticide for grass grub (*Costelytra zealandica*) in New Zealand. **Trevor A. Jackson<sup>1</sup>, Mark R. McNeill<sup>2</sup>, Colin M. Fergusson<sup>1</sup>, Maureen O'Callaghan<sup>1</sup> and Richard J. Townsend<sup>1</sup>.** <sup>1</sup>Biocontrol and Biosecurity, AgResearch, PO Box 60, Lincoln New Zealand; <sup>2</sup>Invermay Research Centre, Private Bag 50034, Mosgiel, New Zealand

MCP8 Induced *Serratia entomophila* Sep proteins show activity against larvae of the New Zealand grass grub *Costelytra zealandica*. **Mark R.H. Hurst, Sandra M. Jones, Binglin Tan and Trevor A. Jackson.** Biocontrol Technologies, AgResearch,

Canterbury Agricultural and Science Centre,  
PO Box 60, Lincoln, New Zealand

- MCP9 Inheritance of Resistance and Effect of PM on Toxicity of *Bacillus thuringiensis* toxin Cry1Ac in Cabbage looper, *Trichoplusia ni*. **Wei Guo<sup>1,2</sup>, Guoxun Li<sup>3</sup> and Ping Wang<sup>2</sup>**. <sup>1</sup>Agricultural University of Hebei, Biocontrol Center of Plant Diseases and Pests of Hebei, Baoding, Hebei 071001, China; <sup>2</sup>Department of Entomology, Cornell University, New York State Agricultural Experiment Station, Geneva, NY 14456, USA; <sup>3</sup>College of Plant Protection, Laiyang Agricultural University, Qingdao, Shandong 266109, China
- MCP10 A chitin deacetylase-like protein identified from cabbage looper, *Trichoplusia ni*. **Wei Guo<sup>1,2</sup>, Guoxun Li<sup>3</sup> and Ping Wang<sup>2</sup>**. <sup>1</sup>Agricultural University of Hebei, Biocontrol Center of Plant Diseases and Pests of Hebei, Baoding, Baoding, Hebei 071001, China; <sup>2</sup>Department of Entomology, Cornell University, New York State Agricultural Experiment Station,, Geneva, NY 14456, USA; <sup>3</sup>College of Plant Protection, Laiyang Agricultural University, Qingdao, Shandong 266109, China
- MCP11 A cDNA-AFLP differential gene expression of the entomopathogenic fungi *Beauveria bassiana* during growth on different insect cuticles. **Akbar Ali khan Pathan<sup>1</sup>, Annette Reineke<sup>2</sup> and Uma Devi Koduri<sup>1</sup>**. <sup>1</sup>Andhra University, Department of Botany, Andhra University, Visakhapatnam, India-530003.; <sup>2</sup>Max-Planck Institute of Chemical Ecology, Department of Entomology, Max-Planck Institute of Chemical Ecology, Hans Knoell Str. 8, D-07745, Jena, Germany
- MCP12 Cloning and Expression of *cry3Aa8* gene from a *Bacillus thuringiensis* isolate against Coleoptera *Leptinotarsa decemlineata*. **Chengfeng Lei, Meiyang Gao, Shunying Dai and Rongsen Li**. Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, 430071, China
- MCP13 Mycoinsecticides: comprehensive list and current status. **Marcos R. de Faria<sup>1,2</sup> and Stephen P. Wraight<sup>3</sup>**. <sup>1</sup>Embrapa Recursos Genéticos e Biotecnologia, Brasília, DF, 70849-970, Brazil; <sup>2</sup>Cornell University, Comstock Hall, Ithaca, NY 14853-2601, USA; <sup>3</sup>USDA, ARS, Plant, Soil and Nutrition Laboratory, Ithaca, NY, 14850-2901, USA
- Microsporidia**
- MP1 Eleven antimicrobials tested *per os* against a grasshopper pathogenic microsporidium (Fungi: Microsporidia). **S. Johnny<sup>1</sup>, Carlos E. Lange<sup>2</sup>, Leellen F. Solter<sup>3</sup>, Amber Merisko<sup>4</sup> and Douglas W. Whitman<sup>4</sup>**. <sup>1</sup>Laboratory of Molecular Genetics, Centre for DNA Fingerprinting and Diagnostics, ECIL Road, Nacharam, Hyderabad 500 076, India; <sup>2</sup> La Plata National University, Center for Parasitological Studies (CEPAVE), CONICET, La Plata, Argentina; <sup>3</sup>Illinois Natural History Survey, 1816 S. Oak St., Champaign, IL 61820, USA; <sup>4</sup>Illinois State University, Department of Biology, Normal, IL 61790, USA
- MP2 Isolation and partial characterisation of a spore wall protein from *Nosema bombycis*. **Fan Zhang<sup>1</sup>, Meng Xing Lu<sup>1</sup>, Shyam V Kumar<sup>2</sup>, Song Hong Chen<sup>1</sup>, Xian Zheng Chen<sup>1</sup> and Yan Hai Zhang<sup>1</sup>**. <sup>1</sup>Laboratory of Invertebrate Pathology, Zhejiang University, Hangzhou 310029, People's Republic of China; <sup>2</sup>P. G. Department of studies and Research in Sericulture Karnatak University, Dharwad-580 003, INDIA
- MP3 **STU** The phylogenetic analysis of *Endoreticulatus* sp. Taiwan by gene sequences. **Chih Yuan Wang<sup>1</sup>, Leellen F. Solter<sup>2</sup> and Chung Hsiung Wang<sup>1</sup>**. <sup>1</sup>Department of Entomology, National Taiwan University, NO. 27, Lane 113, Sec. 4, Roosevelt Rd., Taipei, Taiwan (ROC) 106; <sup>2</sup>Center for Entomology, Illinois Natural History Survey, East Peabody Drive, Champaign, IL 61820, USA 607
- MP4 An evaluation on the factors influencing on shelf life of *Verticillium lecanii* conidia at room temperature. **Zhangyan Shi, Xiaoyu Yang and Long Zhang**. College of Agronomy and Biotechnology, China Agricultural University, Beijing 100094
- Studies on *Nosema* sp. (Microsporida) from Beet armyworm *Laphygma exigua* in China. **Chen Guang-Wen<sup>1</sup>, Chen Qu-Hou<sup>2</sup>**. <sup>1</sup>College of Life Sciences, Henan Normal University, Xinxiang 453002, Henan, China, <sup>2</sup>College of Life Sciences, Central China Normal University, Wuhan 430070, China
- Viruses I**
- VP1 A novel direct cloning system for making recombinant baculoviruses. **Olga Lihoradova<sup>1</sup>,**

- Irina Ogay<sup>1</sup>, Jeffrey Morley Slack<sup>2</sup> and Abdusattor Abdukarimov<sup>1</sup>.** <sup>1</sup>Institute of Genetics and Plant Experimental Biology, Uzbek Academy of Science, Tashkent, 702151, Uzbekistan; <sup>2</sup>USDA/ARS, Insect Biocontrol Laboratory, Beltsville MD, 20852-2350 USA
- VP2 SV40 polyadenylation (pA) sequence is redundant in baculovirus expression system. **Craig P Seaborn, Jianli Xue and Xiao-Wen Cheng.** Miami University, Department of Microbiology, 32 Pearson Hall, Miami University, Oxford, Ohio 45056 USA
- VP3 Influence of Cytochrome C on Apoptosis Induced by SfaMNPV in Insect *Spodoptera litura* Cells. **Lijun Liu, Jianxin Peng, Kaiyu Liu, Hong Yang, Yi Li and Huazhu Hong.** Institute of Entomology, Central China Normal University, Institute of Entomology, Central China Normal University, Wuhan 430079
- VP4 Over expression of *Pfu* DNA polymerase by recombinant baculovirus infected silkworm. **Yin Chen, Xu'ai Lin, Yongzhu Yi, Guifang Shen and Zhifang Zhang.** Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing, 100081, China
- VP5 Characteristic of *Autographa californica* nucleopolyhedrovirus *Ubiquitin* gene promoter. **Xu'ai Lin, Yin Chen, Yongzhu Yi and Zhifang Zhang.** Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing, 100081, China
- VP6 Interactions between subunits of the *Autographa californica* nucleopolyhedrovirus-encoded RNA polymerase. **Erin A. Crouch, Kristy G. Morales and A. Lorena Passarelli.** Division of Biology, Kansas State University, Manhattan, KS 66506 USA
- VP7 Cloning and sequencing of *Epinotia aporema* granulovirus (EpapGV) *gp37*-like gene. **Ricardo Salvador<sup>1,2</sup>, Leticia Ferrelli<sup>2</sup>, Marina Biedma<sup>2</sup>, Alejandro Parola<sup>2</sup>, Victor Romanowski<sup>2</sup> and Alicia Sciocco-Cap<sup>1</sup>.** <sup>1</sup>IMYZA-CICVyA, Instituto Nacional de Tecnología Agropecuaria (INTA), CC 25, (1712) Castelar, Buenos Aires, Argentina; <sup>2</sup>IBBM, Facultad de Ciencias Exactas, Universidad Nacional de La Plata, 115 y 49, (1900) La Plata, Argentina
- VP8 Expression of human renin using two baculovirus systems. **Dulcyane Neiva Mendes<sup>1,2</sup>, Francisco De Assis Rocha Neves<sup>2</sup>, Luiz Alberto Simeoni<sup>2</sup>, William Sihler<sup>1</sup> and Marlinda Lobo de Souza<sup>1</sup>.** <sup>1</sup>Embrapa Genetic Resources and Biotechnology, NTCB, Brasília, DF, Brazil, 70700-900; <sup>2</sup>Laboratory of Molecular Pharmacology, University of Brasília, Brasília, DF, Brazil, 70910-900
- VP9 Production of human interferon-gamma by a novel bi-cistronic baculovirus expression vector. **Tzong-Yuan Wu.** Department of Bioscience Technology, Chung Yuan Christian University, Department of Bioscience Technology, Chung Yuan Christian University, Chung-Li 320, Taiwan
- VP10 **[STU]** Characterization of MacoNPV enhancin and its interaction with *Mamestra configurata* peritrophic matrix proteins. **Umut Toprak<sup>1,2</sup>, Martin Erlandson<sup>1</sup>, Cedric Gillott<sup>2</sup>, Dwayne Hegedus<sup>1</sup> and Qianjun Li<sup>1</sup>.** <sup>1</sup>Agriculture and Agri-Food Canada, Saskatoon Research Centre, Saskatoon, 107 Science Place, Saskatoon, Saskatchewan, Canada S7N 0X2; <sup>2</sup>Department of Biology, University of Saskatchewan, 112 Science Place Saskatoon, Saskatchewan, Canada S7N 5E2
- VP11 **[STU]** Functional studies on *Spodoptera litura* multiple nucleopolyhedrovirus anti-apoptotic genes. **Tiehao Lin, Mei Yu, Wenbi Wu, Yingxue Gong, Yi Pang and Kai Yang.** State Key Laboratory of Biocontrol, Sun Yat-sen University, Guangzhou 510275, People's Republic of China
- VP12 **[STU]** Analysis of the immediate early *me53* gene from the baculovirus AcMNPV. **Jondavid De Jong<sup>1</sup>, Theilmann A David<sup>2</sup>, Arif M Basil<sup>3</sup> and Krell John Peter<sup>1</sup>.** <sup>1</sup>Department of Molecular and Cellular Biology, University of Guelph, 488 Gordon Street, Guelph, Ontario Canada N1G 2W1; <sup>2</sup>Agriculture and Agrifood Canada, Biotechnology, Summerland BC, Canada V0H 1Z0; <sup>3</sup>Great Lakes Forestry Centre, 1219 Queen Street East, Sault Ste Marie, Ontario, Canada P6A 2E5
- VP13 **[STU]** Expression of anti-apoptotic *p35* gene in tobacco enhances tolerance to abiotic stresses and increases the virulence of AcMNPV. **Jianhua Song, Zhihua Wang, Changyong Liang, Shiyun Chen and Xinwen Chen.** State Key Laboratory of Virology, Wuhan Institute of Virology, the Chinese Academy of Sciences, Wuhan, 430071, the People's Republic of China

VP14 **STU** Ha135, a unique nonstructural protein of HearNPV, is not essential for viral propagation. **Xiaoyu Pan<sup>1</sup>, Gang Long<sup>1,2</sup>, Marcel Westenberg<sup>2</sup>, Songwang Hou<sup>1</sup>, Fei Deng<sup>1</sup>, Hualin Wang<sup>1</sup>, Just M Vlak<sup>2</sup> and Zhihong Hu<sup>1</sup>.** <sup>1</sup>State key laboratory of virology, Wuhan institute of Virology, Chinese Academy of Sciences, Wuhan, Hubei, 430071, P.R.China; <sup>2</sup>Laboratory of Virology, Wageningen University and Research Center, 6709 PD Wageningen, the Netherlands

VP15 **STU** Construction of Bac-to-Bac system of *Bombyx mori* NPV. **Jinshan Huang<sup>1</sup>, Bifang Hao<sup>1,2</sup>, Xiulian Sun<sup>1</sup>, Fei Deng<sup>1</sup>, Hualin Wang<sup>1</sup> and Zhihong Hu<sup>1</sup>.** <sup>1</sup>State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, Hubei, 430071, P.R.China; <sup>2</sup>Northwest A & F University, Yangling, Shanxi, 712100, P.R.China

VP16 **STU** Functional role of aspartic proteinase cathepsin D in *Bombyx mori* metamorphosis. **Kwang Sik Lee<sup>1</sup>, Byung Rae Jin<sup>1</sup>, Zhong Zheng Gui<sup>1</sup>, Bo Yeon Kim<sup>1</sup>, Young Soo Choi<sup>1</sup>, Ya Dong Wei<sup>1</sup>, Young Moo Choo<sup>1</sup>, Yeon Ho Je<sup>2</sup>, Xijie Guo<sup>3</sup> and Hung Dae Sohn<sup>1</sup>.** <sup>1</sup>College of Natural Resources and Life Science, Dong-A university, Busan, 604-714, Korea; <sup>2</sup>School of Agricultural Biotechnology, Seoul National University, Seoul, Korea; <sup>3</sup>Sericultural Research Institute, Chinese Academy of Agricultural Sciences, Zhenjiang, China

VP17 **STU** Construction of the herpes simplex virus 1 ICP0 eukariotic expression vector and its effects of macrophage function. **Huang Liang.** Department of Microbiology and Immunology, Nanhua University, Hengyang Hunan 421001, China

18:30-20:00 **Dinner** *Haitiangong Dining-Room*

20:00-22:00 Monday, *Meeting Center*

**Bacteria Division Business Meeting**

20:00-22:00 Monday, *Nanyuan Meeting Room*

**Fungi Division Business Meeting**

20:00-22:00 Monday, *Multifunctional Hall*

**Microsporidia Division Business Meeting**

20:00-22:00 Monday, *Xiyuan Meeting Room*

**Nematodes Division Business Meeting**

19:40-22:00 Monday, *Wuhan Institute of Virology*  
(Bus leaves at 19:40 from the hotel)

## Virus Division Business Meeting

**Tuesday, August 29**

**8:00-10:00 Tuesday Meeting Center**

**Symposium: Genetics and characterization of mechanisms of Bt-resistance (Bacteria Division)**

**Convenors: Juan Ferre and William Moar**

8:00 Mutant alleles of a cadherin gene and Cry1Ac resistance in the cotton bollworm, *Helicoverpa armigera*. **Yidong Wu, Haiyan Chen, Yajun Yang, Yihua Yang and Shuwen Wu.** Nanjing Agricultural University, Nanjing, 210095, Jiangsu Province, China

8:30 Resistance and hypersensitivity to Bt crystal toxins. **Raffi Aroian, Brad Barrows, Larry Bischof and Danielle Huffman.** University of California, San Diego, 9500 Gilman Drive, Mail Code 0349 La Jolla, CA 92093-0349 USA

9:00 The diversity of Bt-resistance genes in Lepidoptera. **David G. Heckel.** Max Planck Institute for Chemical Ecology, Hans-Knoell-Str. 8, D-07745 Jena, GERMANY

9:30 A proteomic approach to study resistance to *Bacillus thuringiensis* Cry toxins in *Heliothis virescens* larvae. **Juan L. Jurat-Fuentes<sup>1</sup> and Michael J. Adang<sup>2</sup>.** <sup>1</sup>Department of Entomology and Plant Pathology, The University of Tennessee, 205 Ellington Plant Sciences Building, Knoxville, TN 37996; <sup>2</sup>Department of Entomology, University of Georgia, 413 Biological Sciences Building, Athens, GA 30602

**8:00-10:00 Tuesday Multifunctional Hall**

**Symposium: Field Performance of Insect Viruses (Virus Division)**

**Convenors: Zhihong Hu and Basil M. Arif**

8:00 New developments in the use of codling moth granulovirus. **Juerg Huber.** BBA, Institute for Biological Control, D-64287 Darmstadt, Germany

8:30 Abietiv: Field efficacy and registration of the balsam fir sawfly nucleopolyhedrovirus in Canada. **Christopher John Lucarotti.** Canadian Forest Service - Atlantic Forestry Centre, 1350 Regent Street, P.O. Box 4000, Fredericton, NB E3B5P7, Canada

9:00 New strategies of using viruses to control agricultural and forest pests in China. **Xiulian**

**Sun, Zhihong Hu and Huiying Peng.** State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, 430071, Hubei, China

**Franco Widmer and Juerg Enkerli.** Molecular Ecology, Agroscope FAL Reckenholz, Reckenholzstrasse 191, CH-8046 Zürich, Switzerland.

9:30 Preliminary greenhouse trials with indigenous TnSNPV and AcMNPV isolates for cabbage looper (*Trichoplusia ni*) control in greenhouse vegetable production. **Martin A. Erlandson<sup>1,2</sup>, Dave Gillespie<sup>3</sup>, Melissa Strom<sup>2</sup>, Don Quiring<sup>3</sup> and David Theilmann<sup>4</sup>.** <sup>1</sup>Agriculture and Agri-Food Canada, Saskatoon Research Centre, 107 Science Place, Saskatoon, SK, S7N 0X2 Canada; <sup>2</sup>Department of Applied Microbiology and Food Science, University of Saskatchewan, 51 Campus Drive, Saskatoon, SK, S7N 5A8 Canada; <sup>3</sup>Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, 6947 Hyw 7, Agassiz, BC, V0M 1A0 Canada; <sup>4</sup>Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, 4200 Hyw 97, Summerland, BC, V0H 1Z0 Canada

9:00 **STU** Sequence comparison of a hydrophobin-like protein involved in conidial thermotolerance of different *Beauveria bassiana* strains. **Sheng-Hua YING and Ming-Guang FENG.** Institute of Microbiology, College of Life Sciences, Zhejiang University, Hangzhou, Zhejiang, 310058, China

9:15 Cloning and characterization of a gene encoding a cuticle-degrading protease from the nematophagous fungus *Lecanicillium psalliotae* (syn. *Verticillium psalliotae*). **Jinkui Yang, Lianming Liang, Ying Zhang, Juan Li and Keqin Zhang\*.** Laboratory for Conservation and Utilization of Bio-resources, Yunnan University, No.2 of north cuihu road, Kunming, 650091, Yunnan Province, P. R. China

#### 8:00-10:00 Tuesday Nanyuan Meeting Room

##### Contributed Papers: Fungi 2

**Moderators: Jørgen Eilenberg and Keqin Zhang**

8:00 Does each host species harbour its own genotype of *Strongwellsea*? **Jørgen Eilenberg and Annette Bruun Jensen.** Department of Ecology, The Royal Veterinary and Agricultural University, Thorvaldsensvej 40, DK 1871 Frb C, DENMARK

8:15 Regulator of G protein signaling pathway gene *cag8* is involved in conidiation of *Metarhizium anisopliae*. **Weiguo Fang and Michael J Bidochka.** Department of Biological Sciences Brock University, St. Catharines, Ontario L2S 3A1, Canada

8:30 Isolation and insecticidal property of toxins from *Verticillium lecanii*. **Liande Wang<sup>1,2</sup>, Jian Huang<sup>2</sup>, Minsheng You<sup>1</sup>, Xiong Guan<sup>2</sup> and Bo Liu<sup>3</sup>.** <sup>1</sup>Institute of Applied Ecology, Fujian Agriculture & Forestry University, Fuzhou, 350002, P.R. China; <sup>2</sup>Key Laboratory of Biopesticide and Chemical Biology, MOE.Fujian Agriculture & Forestry University, Fuzhou, 350002, P.R. China; <sup>3</sup>Institute of Biotechnology, Fujian Academy of Agricultural Science, Fuzhou, 350001, P.R. China.

8:45 A PCR-RFLP approach for three endochitinase genes from glycohydrolase family 18 for the characterization and identification of *Metarhizium* strains. **Vandana Ghormade,**

9:30 **STU** Purification and cloning of extracellular enzymes from *Clonostachys rosea* and their potential as pathogenic factors. **Lianming Liang, Jinkui Yang, Zhongwei Gan, Ying Zhang and Keqin Zhang\*.** Laboratory for Conservation and Utilization of Bio-resources, Yunnan University, No.2 of north Cuihu road, Kunming, 650091, Yunnan Province, P.R. China

9:45 **STU** Variation in the activities of superoxide dismutase among twenty *Beauveria bassiana* strains. **Bao-Fu Huang and Ming-Guang FENG.** Institute of Microbiology, College of Life Sciences, Zhejiang University, Hangzhou, Zhejiang, 310058, China

#### 8:00-10:00 Tuesday Xiyuan Meeting Room

##### Contributed Papers: Microsporidia

**Moderators: Andreas Linde and James Becnel**

8:00 Discovery of an *Encephalitozoon* sp. (Fungi: Microsporidia) in an invertebrate host. **Carlos E. Lange<sup>1</sup>, Leellen F. Solter<sup>2</sup>, Michael D. Baker<sup>3</sup>, S. Johny<sup>4</sup>, Douglas W. Whitman<sup>5</sup> and Ann Cali<sup>6</sup>.** <sup>1</sup>Center for Parasitological Studies (CEPAVE), La Plata National University, CONICET, La Plata, Argentina; <sup>2</sup>Illinois Natural History Survey, 1816 S. Oak St., Champaign, IL 61820, USA; <sup>3</sup>Iowa State University, 1184 Molecular Biology Bldg., Ames, IA 50011 USA; <sup>4</sup>Laboratory of Molecular Genetics Centre for DNA

Fingerprinting and Diagnostics, ECIL Road, Nacharam, Hyderabad 500 076, India; <sup>5</sup>Illinois State University, Department of Biology, Normal, IL 61790, USA; <sup>6</sup>Rutgers University, Dept. of Biological Sciences, Smith Hall, 101 Warren St., Newark, NJ 07102, USA

- 8:15 The pathogenicity of *Nosema apis*, from *Apis mellifera ligustica*, to worker of *Apis cerana cerana*. **Huang Shaokang, Ye Shengzhu, Dong Je.** Bee Sciences College, Fujian Agriculture and Forestry University, 350002
- 8:30 Quantifying transmission of microsporidia in the gypsy moth, *Lymantria dispar*. **Gernot Hoch<sup>1</sup>, Vincent D'Amico<sup>2</sup>, Dörte Goertz<sup>1</sup> and Leellen F. Solter<sup>3</sup>.** <sup>1</sup>BOKU – University of Nat. Res. and Appl. Life Sci., Hasenauerstrasse 38, 1190 Vienna, Austria; <sup>2</sup>USDA FS – NERS RWU 4502 / Univ. of Delaware, Townsend Hall, Newark, DE 19716, U.S.A.; <sup>3</sup>Illinois Natural History Survey, 1816 S. Oak St., Champaign, IL 61820, U.S.A
- 8:45 Strategies and tactics for control of locust (*Locusta migratoria manilensis*) in China. **Long Zhang, Yuhua Yan.** Key Lab for Biocontrol of Pests, Ministry of Agriculture China Agricultural University, Beijing 100094, China
- 9:00 **STU** Infections experiments with different spore types and different microsporidian isolates of *Lymantria dispar*. **Thomas Kolling and Andreas Linde.** Fachhochschule Eberswalde, Dept. of Forestry, Applied Ecology, Alfred-Moeller-Str. 1, 16225 Eberswalde, Germany
- 9:15 **STU** Effects of an anti-exospore monoclonal antibody on microsporidial (*Nosema bombycis*) germination *in vitro*. **Fan Zhang<sup>1</sup>, Meng Xing Lu<sup>1</sup>, Shyam V Kumar<sup>2</sup>, Jie Hong Zhu<sup>1</sup>, Song Hong Chen<sup>1</sup>, Xian Zheng Chen<sup>1</sup> and Jian Hong<sup>1</sup>.** <sup>1</sup>Laboratory of Invertebrate Pathology, Zhejiang University, Hangzhou 310029, People's Republic of China; <sup>2</sup>P.G.Department of studies and Research in Sericulture Karnatak University, Dharwad-580 003,INDIA
- 9:30 **STU** The comparison of rDNA of *Nosema ceranae* isolates. **Wei-Fone Huang<sup>1</sup>, Michel BOCQUET<sup>2</sup>, Ker-Chang Lee<sup>1</sup> and Chung-Hsiung Wang<sup>1</sup>.** <sup>1</sup>Department of Entomology, National Taiwan University, 106, Taipei, Taiwan; <sup>2</sup>APIMEDIA, BP22, Pringy, France

10:00-10:30 **Coffee Break**

**10:30-12:30 Tuesday Nanyuan Meeting Room**  
**Symposium: Novel approaches for dealing with difficult data (Microbial Control Division)**  
**Convenor: Surendra Dara**

- 10:30 Analysis, interpretation, and avoidance of difficult data in bioassay. **S. P. Wraight.** USDA-ARS Plant Protection Research Unit, U.S. Plant, Soil and Nutrition Laboratory, Tower Road, Cornell University, Ithaca, New York 14853 USA
- 11:00 Top reasons why papers have been rejected for publication. **Mark S. Goettel<sup>1</sup>, Quirico Migheli<sup>2</sup> and Charles H. Pickett<sup>3</sup>.** <sup>1</sup>Lethbridge Research Centre, Agriculture & Agri-Food Canada, 5403 1st Avenue South, Lethbridge, AB, Canada T1J 4B1; <sup>2</sup>Dipartimento di Protezione delle Piante, Università degli Studi di Sassari, Via E. De Nicola 9, I-07100 Sassari, Italy; <sup>3</sup>Biological Control Program, California Department of Food and Agriculture, 3288 Meadowview Road, Sacramento, CA, 95832, USA
- 11:30 Lost to industrial secrecy, statistical insignificance and short attention span: dark, dead, and dated data. **Jeff Lord.** US Department of Agriculture, Agricultural Research Service, Manhattan, Kansas 66502, USA
- 12:00 Hard lessons and perspectives of laboratory bioassays and field trials with entomopathogenic fungi. **Jarrold E. Leland<sup>1</sup> and Debbie Boykin<sup>2</sup>.** <sup>1</sup>USDA-ARS, SIMRU, NBCL, 59 Lee Road, Stoneville, MS 38776; <sup>2</sup>USDA-ARS, Midsouth Area Statistician, 141 Experiment Station Road, Stoneville, MS, 38776
- 10:30-12:30 Tuesday Meeting Center**  
**Contributed papers: Bacteria 1**  
**Moderator: Didier Lereclus**
- 10:30 The *Bacillus thuringiensis* InhA metalloproteases: conclusive weapons for infection. **Christina Nielsen-LeRoux<sup>1,2</sup>, Myriam Ellouze-Hajaj<sup>1</sup>, Nalini Ramarao<sup>1</sup>, Christophe Buisson<sup>1</sup>, Elisabeth Guillemet<sup>1</sup>, Michel Bréhelin<sup>3</sup>, Michel Gohar<sup>1</sup> and Didier Lereclus<sup>1</sup>.** <sup>1</sup>INRA, Unité Génétique Microbienne et Environnement, INRA, la Minière, 78285 Guyancourt; <sup>2</sup>Institut Pasteur, Département de Microbiologie Institut Pasteur,

75724 Paris Cedex 15, France<sup>2</sup>; <sup>3</sup>INRA ,  
Université de Montpellier II, 3Ecologie  
Microbienne des Insectes et Interactions  
Hôte-Pathogène Université Montpellier II,  
34095 Montpellier Cedex 05, France

- 10:45 **STU** *Bacillus nematocida* kills nematodes with two coordinated pathogenic factors: Bae16 and Bace16. **QiuHong Niu, XiaoWei Huang, Lin Zhang and Keqin Zhang** . Laboratory for Conservation and Utilization of Bio-resources, Yunnan University, Kunming 650091
- 11:00 **STU** Requirement of *spoIIIAE* gene and *spoIVF* operon for sporulation and producing  $\delta$ -endotoxins in *Bacillus thuringiensis* G03. **Changpo Sun<sup>1</sup>, Fuping Song<sup>2</sup>, Jie Zhang<sup>2</sup> and Dafang Huang<sup>1</sup>**. <sup>1</sup>Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing 100081,China; <sup>2</sup>State Key Laboratory for Biology of Plant Diseases and Insect Pests, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing 100094, China
- 11:15 The organic composition of silk gland of silkworm, *Bombyx mori* L infected with *Bacillus thuringiensis*. **Bharathi Depuru<sup>1</sup> and Yungen Miao<sup>2</sup>**. <sup>1</sup>Prof.D.Bharathi, Dept of Sericulture, Sri Padmavati Women's University, Tirupati-517502, A.P., INDIA; <sup>2</sup>Prof.Miao Yungen, Dept of Sericulture, College of Animal Sciences, Zhejiang University, Hangzhou, China
- 11:30 **STU** Molecular characterization of the plasmid genome from *Bacillus thuringiensis* subsp. *Tenebrionis* YBT-1765. **Junyan Huang, Suxia Guo, Dongmei Han, Li Wang, Ziniu Yu and Ming Sun**. State Key Laboratory of Agricultural Microbiology, College of Life Science and Technology, Huazhong Agricultural University, Wuhan 430070, Hubei, People's Republic of China
- 11:45 **STU** Anthrax virulence plasmid pXO1 conservative fragments within *Bacillus cereus* group and their phylogenic relatedness with pathogenicity. **Xiaomin Hu<sup>1,2</sup>, Bjarne Munk Hansen<sup>2</sup>, Niels Bohse Hendriksen<sup>2</sup> and Zhiming Yuan<sup>1</sup>**. <sup>1</sup>Wuhan Institute of Virology, Chinese Academy of Science, Wuhan 430071, China; <sup>2</sup>National Environmental Research Institute, 4000 Roskilde, Denmark
- 12:00 **STU** Toxicity analysis of truncated insecticidal crystal protein Cry1Ah from *Bacillus thuringiensis*. **Jing Xue<sup>1</sup>, Fuping Song<sup>1</sup>,**
- Dafang Huang<sup>2</sup> and Jie Zhang<sup>1\*</sup>**. <sup>1</sup>State Key Laboratory for Biology of Plant Diseases and Insect Pests, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing 100094, P. R. China; <sup>2</sup>Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing 100081, P. R. China
- 12:15 Molecular dynamics simulations of the Bt toxin Cyt1A: the model and its validation by fluorescence resonance energy transfer. **Xiaochuan Li<sup>1</sup>, Kerrick Nevels<sup>1</sup>, Dexuan Xie<sup>2</sup>, Marianne P. Carey<sup>3</sup> and Peter Butko<sup>1</sup>**. <sup>1</sup>University of Southern Mississippi, Department of Chemistry and Biochemistry, Hattiesburg, MS 39406, USA; <sup>2</sup>University of Wisconsin, Department of Mathematical Sciences, Milwaukee, WI 53211, USA; <sup>3</sup>Case Western Reserve University, Department of Biochemistry, Cleveland, OH 44106, USA

#### 10:30-12:30 Tuesday Multifunctional Hall

##### Contributed papers: Viruses 1

Moderators: Linda King and Xinwen Chen

- 10:30 *Helicoverpa armigera* nucleopolyhedrovirus *orf80* encodes a late, nonstructural protein. **Dun Wang<sup>1,2</sup> and Chuan-xi Zhang<sup>1</sup>**. <sup>1</sup>Institute of Applied Entomology, Zhejiang University, Hangzhou, 310029, P.R. China.; <sup>2</sup> College of Forestry, Northwest A&F University, Shaanxi Yangling, 712100, P.R. China.
- 10:45 **STU** The *Helicoverpa armigera* nucleopolyhedrovirus FGF is essential for BV infection. **Xiang Li, Changyong Liang, Jianhua Song, Xinwen Chen**. State Key Laboratory of Virology, Wuhan Institute of Virology, the Chinese Academy of Sciences, Wuhan, 430071, the People's Republic of China
- 11:00 **STU** Functional analysis of baculovirus DNA photolyase genes. **Fang Xu<sup>1</sup>, Margit Lampen<sup>1,2</sup>, Christina Van Houte<sup>1</sup>, André P.M. Eker<sup>2</sup>, Just M. Vlask<sup>1</sup> and Monique M. Van Oers<sup>1</sup>**. <sup>1</sup>Laboratory of Virology, Wageningen University, Binnenhaven 11, 6709 PD Wageningen, the Netherlands; <sup>2</sup>Department of Cell Biology and Genetic, Erasmus University Medical Center, Dr Molewaterplein 50, 3015 GE Rotterdam, the Netherlands
- 11:15 **STU** The Baculovirus P10 protein forms two distinct cytoskeletal-like structures with different cellular localisation properties. **David**

**CJ Carpentier, Caroline M Griffiths and Linda A King.** Insect Virus Research Group, School of Biological and Molecular Sciences, Oxford Brookes University, Headington, Oxford, OX3 0BP, United Kingdom

11:30 **STU** 38K is required for *Autographa californica* multiple nucleopolyhedrovirus nucleocapsid Assembly. **Wenbi Wu, Tiehao Lin, Lijing Pan, Mei Yu, Zhaofei Li, Yi Pang and Kai Yang.** State Key Laboratory of Biocontrol, Sun Yat-sen University, Guangzhou 510275, People's Republic of China

11:45 **STU** HA2 from the *Helicoverpa armigera* nucleopolyhedrovirus: A WASP-related protein that activates Arp2/3-induced actin filament formation. **Qian Wang<sup>1,2</sup>, Changyong Liang<sup>1</sup>, Jianhua Song<sup>1</sup> and Xinwen Chen<sup>\*1</sup>.** <sup>1</sup>State Key Lab of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences., Wuhan 430071, People's Republic of China; <sup>2</sup>Graduate School of the Chinese Academy of Sciences, Beijing, 100039, People's Republic of China

12:00 **STU** The cytoplasmic tail domain of baculovirus group II F proteins is essential for viral infectivity. **Gang Long<sup>1,2</sup>, Xiaoyu Pan<sup>1</sup>, Marcel Westenberg<sup>2</sup>, Zhihong Hu<sup>1</sup> and Just M. Vlak<sup>2</sup>.** <sup>1</sup>Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, Hubei, 430071, China; <sup>2</sup>Laboratory of Virology, Wageningen University, Binnenhaven 11, 6709 PD Wageningen, The Netherlands

12:15 **STU** The unique functions of a marvelous gene p13 from type II baculoviruses. **Enqi Du<sup>1</sup>, Feng Yan<sup>1</sup>, Weixin Jin<sup>2</sup>, Wenke Zhou<sup>1</sup>, Yipeng Qi<sup>1</sup>.** <sup>1</sup>Key laboratory of Virology, Wuhan University, Wuhan, P. R. China, <sup>2</sup>Institute of Microbiology, KIM IL SUNG University, Daesung, Pyongyang, P. R. Korea

13:00-17:00 **Tuesday, Excursion** (light lunch included, tickets required)  
Buses leave at 13:00 from the hotel, end at Wuhan Botanic Garden for 5K Race and BBQ

18:00-18:50 **Tuesday, 5K Race** Wuhan Botanic Garden

**For those who do not participate in the excursion:**

12:30-14:00 **Lunch** Haitiangong Dining-Room

16:00 Buses leave from the hotel to Wuhan Botanic Garden for 5K Race and BBQ

19:00-22:00 **BBQ and Entertainments** Wuhan Botanic Garden

**Wednesday, August 30**

**8:00-10:00, Wednesday Nanyuan Meeting Room**  
**Symposium: Ecology of Entomophthorales (Fungi Division)**  
**Convenor: Ming-Guang Feng**

8:00 Host-pathogen interaction in Entomophthorales in agro-ecosystems: initiation of epizootics and relationship between host species and fungal genotype. **Jørgen Eilenberg, Annette Bruun Jensen and Charlotte Nielsen.** Department of Ecology, The Royal Veterinary and Agricultural University, Thorvaldsensvej 40, DK 1871 Frb C, DENMARK

8:30 Persistence and spread of *Entomophaga maimaiga* infecting *Lymantria dispar*. **Ann E. Hajek<sup>1</sup>, Charlotte Nielsen<sup>2</sup> and Patrick C. Tobin<sup>3</sup>.** <sup>1</sup>Department of Entomology, Cornell University, Ithaca, New York 14853-2601 USA; <sup>2</sup>Royal Veterinary & Agricultural University, Copenhagen 1870 Denmark; <sup>3</sup>USDA, Forest Service, Morgantown, West Virginia 26505-3180 USA

9:00 Intraguild interactions involving Entomophthorales. **Judith K. Pell<sup>1</sup>, Jason Baverstock<sup>1</sup>, Ariel W. Guzman Franco<sup>1</sup> and Helen E. Roy<sup>2</sup>.** <sup>1</sup>Plant and Invertebrate Ecology Division, Rothamsted Research, Harpenden, Hertfordshire, AL5 2JQ, UK; <sup>2</sup>Department of Life Sciences, Anglia Ruskin University, Cambridge, Cambridgeshire, CB1 1PT, UK

9:30 Transmission of obligate aphid pathogens (Entomophthorales) with host dispersal flight: from biological hypothesis to confirmation. **Ming-Guang Feng.** Institute of Microbiology, College of Life Sciences, Zhejiang University, Hangzhou, Zhejiang, 310058, China

**8:00-10:00, Wednesday Xiyuan Meeting Room**  
**Symposium: Emerging pest targets for Entomopathogenic nematodes (Nematode Division)**  
**Convenors: David Shapiro-Ilan and Richou Han**

8:00 Emerging pests targets for Entomopathogenic nematodes in China. **Richou Han, Li Cao, Guohong Wang, Jinghua Chen and Xuehong Qiu.** Guangdong Entomological Institute, Guangzhou, China

- 8:24 Entomopathogenic nematodes and emerging pests in Latin America: the quest for a sustainable world. **S. Patricia Stock<sup>1</sup>, Jesus Alcazar<sup>2</sup>, Juan Carlos Lopez-Nunez<sup>3</sup>, Luis Leite<sup>5</sup> and Mayra Rodriguez Hernandez<sup>5</sup>.** <sup>1</sup>Dept. Entomology, University of Arizona, USA. <sup>2</sup>Centro Internacional de la Papa, Peru. <sup>3</sup>IB/Lab. Controle Biológico. CP 70 Cep 13001-970. Campinas, Brasil. <sup>4</sup>Cenicafe, Manzanales, Chinchina, Colombia. <sup>5</sup>Centro Nacional de Sanidad Agropecuaria, Cuba
- 8:48 New and upcoming target pests for Entomopathogenic nematodes in North America. **David I. Shapiro-Ilan<sup>1</sup> and Parwinder Grewal<sup>2</sup>.** <sup>1</sup>USDA-ARS, SAA Byron, GA USA. <sup>2</sup>Ohio State University, Wooster, OH USA
- 9:12 Current and future uses of nematodes in Western Europe. **Michael J Wilson<sup>1</sup>, Cyrille Verdun<sup>2</sup>, Ehlers Udo Ehlers<sup>3</sup>.** <sup>1</sup>University of Aberdeen, Aberdeen UK. <sup>2</sup>Becker Underwood Ltd, West Sussex, United Kingdom. <sup>3</sup>Christian-Albrechts University Kiel, Raisdorf, Germany
- 9:36 Emerging pest targets for Entomopathogenic nematodes in Asia outside of China. **Ho Yul Choo<sup>15</sup>, Dong Woon Lee<sup>2</sup>, Sang Myeong Lee<sup>3</sup>, Satoshi Yamanaki<sup>4</sup>, Sudershan Ganguly<sup>5</sup> and Vacheree Somsook<sup>6</sup>.** <sup>1</sup>Dept. of Applied Biology & Environmental Sciences, Gyeongsang National University, Jinju, 660-701, Gyeongnam, Korea; <sup>2</sup>Dept. of Applied Biology, Sangju National University, Sangju, 742-711. Kyungpook; <sup>3</sup>Southern Forest Research Center, Forest Research Institute, Jinju, 660-300, Gyeongnam; <sup>4</sup>Arysta Lifescience Cooperation, St. Luke's Tower, Akashi-cho 8-1, Chuo-ku, Tokyo, 104-6591, Japan; <sup>5</sup>Division of Nematology, Indian Agricultural Research Institute, New Delhi-110012, India; and <sup>6</sup>Biological Control Research Section, Entomology & Zoology Group, Plant Protection Research & Development Office, Dept. of Agriculture, Bangkok 10900, Thailand.
- 8:00-10:00, Wednesday Meeting Center**  
**Contributed Papers: Bacteria 2**  
**Moderator: Zhiming Yuan**
- 8:00 What is the mechanism of resistance to *Bacillus thuringiensis* toxin Cry1Ac in a greenhouse population of cabbage looper, *Trichoplusia ni*? **Ping Wang<sup>1</sup>, Jian-zhou Zhao<sup>1</sup>, Ana Rodrigo-Simón<sup>2</sup>, Wendy C. Kain<sup>1</sup>, Alida F. Janmaat<sup>3</sup>, Anthony M. Shelton<sup>1</sup>, Juan Ferré<sup>2</sup> and Judith Myers<sup>3</sup>.** <sup>1</sup>Department of Entomology, Cornell University, New York State Agricultural Experiment Station, Geneva, NY 14456, USA; <sup>2</sup>Department of Genetics, University of Valencia, Dr. Moliner 50, 46100 Burjassot (Valencia), Spain; <sup>3</sup>Department of Zoology, University of British Columbia, Vancouver, British Columbia, V6T 1Z4, Canada
- 8:15 **STU** Production of Bt Cry1Ac resistance in cotton bollworm, *Helicoverpa zea* (Boddie). **Konasale J Anilkumar and William J Moar.** Department of Entomology and Plant Pathology, 301 Funchess Hall, Auburn University, Auburn, Alabama-36849, USA
- 8:30 Lack of irreversible binding as a novel mechanism of resistance to *Bacillus thuringiensis* Cry1Ab toxin. **M. Sales Ibiza-Palacios<sup>1</sup>, Juan Ferré<sup>1</sup>, Satoshi Higurashi<sup>2</sup>, Kazuhisa Miyamoto<sup>3</sup>, Ryoichi Sato<sup>2</sup> and Baltasar Escriche<sup>1</sup>.** <sup>1</sup>Dep. Genética, Universitat de València, 46100-Burjassot, Spain; <sup>2</sup>Grad. School of Bio-Applications and Syst. Eng., Tokyo University of Agr. and Tech., Tokyo 184-8588, Japan; <sup>3</sup>Inst. Insect and Animal Sciences, Natl. Inst. Agrobiol. Sci., Tsukuba Ibaraki 305-8634, Japan
- 8:45 Cross-resistance between Bt and non-Bt insecticides in *Plutella xylostella*. **Ali H Sayyed<sup>1,2</sup>, Graham Moores<sup>3</sup>, Denis J Wright<sup>2</sup> and Neil Crickmore<sup>1</sup>.** <sup>1</sup>Imperial College, Faculty of Life Sciences, Silwood Park, Ascot, Berkshire, SL5 7PY, UK; <sup>2</sup>University of Sussex, School of Life Sciences, Falmer, Brighton, BN1 9QG, UK; <sup>3</sup>Rothamsted Research, Harpenden, Herts, AL5 2JQ, UK
- 9:00 **STU** Cellular mode of action of the *Bacillus sphaericus* binary toxin. **Onya Opota<sup>1</sup>, Nils Gauthier<sup>2</sup>, Emmanuel Lemichez<sup>2</sup>, Colin Berry<sup>3</sup>, David Pauron<sup>1</sup>.** <sup>1</sup>Institut National de la Recherche Agronomique, UMR 1112 INRA/UNSA, 400 Route des Chappes, BP 167, 06903 Sophia Antipolis Cedex, France; <sup>2</sup>INSERM U 627, Faculté de Médecine, 06107 NICE Cedex 2, France; <sup>3</sup>Cardiff School of Biosciences, Cardiff University, Cardiff CF10 3US, United Kingdom
- 9:15 **STU** A second GTPase modifying toxin, named LopT2, is encoded by a remnant prophage in *Photobacterium luminescens* and produced in insect specific organs. **Sonia C. P.**

**Costa<sup>1,2</sup>, Karine Brugirard-Ricaud<sup>1</sup>, Michel Brehelin<sup>1</sup>, Alain Givaudan<sup>1</sup> and Robert Zumbihl<sup>1</sup>.** <sup>1</sup>Laboratoire EMIP - Unité INRA UMII 1133, Université de Montpellier II, Place Eugène Bataillon, Montpellier, France; <sup>2</sup>Departamento de Biologia, Universidade dos Açores, Ponta Delgada, Portugal

- 9:30 **STU** Mutations of residues in three domains of *Bacillus thuringiensis* Cry1C  $\delta$ -endotoxin affect insecticidal activity. **Yu Ren<sup>1</sup>, Fuping Song<sup>1</sup>, Dafang Huang<sup>2</sup> and Jie Zhang<sup>1\*</sup>.** <sup>1</sup>State Key Laboratory for Biology of Plant Diseases and Insect Pests, Chinese Academy of Agricultural Sciences, Beijing 100094, P.R.China; <sup>2</sup> Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing 100081, P.R.China
- 9:45 **STU** Cry1Ac N-terminal mutants with increased toxicity towards the diamondback moth. **Mark Bruce and Neil Crickmore.** University of Sussex, Department of Biochemistry, School of Life Science, University of Sussex, Falmer. Brighton. BN1 9QG. UK

#### 8:00-10:00, Wednesday Multifunctional Hall

##### Contributed Papers: Viruses 2

**Moderators: Johannes A. Jehle and Chuanxi Zhang**

- 8:00 Salivary gland hypertrophy virus (SGHV) as a threat to the success of SIT eradication programs for tsetse flies. **Adly ABD-ALLA<sup>1,3</sup>, Hervé Bossin<sup>1</sup>, François Cousserans<sup>2</sup>, Andrew Parker<sup>1</sup>, Max Bergoin<sup>2</sup> and Alan Robinson<sup>1</sup>.** <sup>1</sup>International Atomic Energy Agency, Entomology Unit FAO/IAEA Agriculture and Biotechnology Laboratory, A-2444 Seibersdorf, Austria; <sup>2</sup>Université Montpellier II, Laboratoire de Pathologie Comparée, France; <sup>3</sup> National Research Centre, Department of Pests and Plant Protection, Dokki, Giza, Egypt.
- 8:15 Nucleopolyhedrosis virus introduction in Australia. **Patrick Buerger<sup>1</sup>, Caroline Hauxwell<sup>2</sup> and David Murray<sup>3</sup>.** <sup>1</sup>Ag Biotech Australia Pty Ltd, P.O.Box 537, Richmond, NSW Australia 2753; <sup>2</sup>Queensland Department of Primary Industries and Fisheries, 80 Meiers Road, Indooroopilly, QLD Australia; <sup>3</sup>Queensland Department of Primary Industries and Fisheries, 203 TorSt, Toowoomba, QLD Australia
- 8:30 Protection mechanism by lignin additives for

baculoviruses against the negative effect of uv radiation. **S. Elnagar<sup>1</sup>, M.A.K. El-Sheikh<sup>1</sup>, A. Amin<sup>1</sup>, G. Fédière<sup>1</sup>, A. A. Atwaand<sup>1</sup> and M. Khattab<sup>1</sup>.** <sup>1</sup>Department of Economic Entomology and Pesticides, Faculty of Agriculture, Cairo University, Giza, Egypt.; <sup>2</sup>Plant Protection Research Institute, Agricultural Research Center,, Ministry of Agriculture, Dokki, Giza.; <sup>3</sup>\*Center of Virology, Institut de Recherche pour Le Développement (IRD)- Faculty of Agriculture, Cairo University, Egypt.

- 8:45 Field resistance of codling moth to Cydia pomonella granulovirus: Occurrence, genetics and breaking. **J. A. Jehle<sup>1</sup>, K. E. Eberle<sup>1</sup>, S. Asser<sup>1</sup>, S. M. Sayed<sup>1</sup> and M. R. Rezapanah<sup>2</sup>.** <sup>1</sup>Laboratory of Biotechnological Crop Protection, Department of Phytopathology, Agricultural Service Center Palatinate (DLR Rheinpfalz), Neustadt a. d. Wstr., Germany; <sup>2</sup>Dept. of Biological Control, Plant Pests Diseases Research, Tehran, Iran
- 9:00 Virulence of a Nucleopolyhedrovirus to Balsam Fir Sawfly (Hymenoptera: Diprionidae). **Shiyu Li.** Canadian Forest Service, Natural Resources Canada, Building 57, 960 Carling Ave. Ottawa, ON, Canada K1A 0C6
- 9:15 **STU** Competition and transmission rate of wild type and recombinant HaSNPV in *Helicoverpa armigera* larvae. **Liljana Georgievska<sup>1,3</sup>, Jenny Cory<sup>2</sup>, Wopke van der Werf<sup>3</sup> and Just M. Vlask<sup>1</sup>.** <sup>1</sup>Laboratory of Virology, Wageningen University, Binnenhaven 11, 6709 RD Wageningen, The Netherlands; <sup>2</sup>Great Lakes Forestry Research Centre, Sault Ste. Marie, Ontario P6A 2E5, Canada; <sup>3</sup>Laboratory of Crop and Weed Ecology, Haarweg 333, 6709 RZ Wageningen, The Netherlands
- 9:30 **STU** Quantitative Relationship of two viruses Viruses (MrNV and XSV) in White Tail Disease of *Macrobrachium rosenbergii* de Man. **Hua Jun ZHANG<sup>1</sup>, Jian Min WANG<sup>1</sup>, Jun Fa YUAN<sup>1</sup>, Li Juan LI<sup>1</sup>, Jian Hong ZHANG<sup>1</sup>, Jean Robert BONAMI<sup>2</sup> and Zheng Li SHI<sup>1</sup>.** <sup>1</sup>State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, 430071 Wuhan, China; <sup>2</sup>Pathogens and Immunity, UMR5119, ECOLAG, CNRS/UM2, Université Montpellier 2, Montpellier, France
- 9:45 Building up standard of cotton bollworm (*Helicoverpa armigera* (Hübner)) Nuclear Polyhedrosis Viruses wettable powder. **Jiang**

**Hui, Wang Xiaojun, Lin Ronghua, Han Xianguo, Chen Kun, Chen Hongying and Liu Qiong.** Institute for the control Agrochemicals, Ministry of Agriculture , Beijing 100026

10:00-10:30 Wednesday, **Coffee Break**

**Setting up Posters Meeting Center**

**10:30-12:30 Wednesday Xiyuan Meeting Room**

**Symposium: Microsporidia in silk moth (Microsporidia Division)**

**Convenors: Gernot Hoch and Leellen Solter**

10:30 *Nosema bombycis* and the silkworm industry. **James J. Becnel.** U. S. Department of Agriculture, Agriculture Research Service, Center for Medical, Agricultural and Veterinary Entomology, 1600 S. W. 23rd Drive, Gainesville, Florida 32608

11:00 Diversity among microsporidian parasites causing silkworm Pebrine disease. **Ji-Ping Liu<sup>1</sup>, Judith E. Smith<sup>2</sup> and Ling Zeng<sup>1</sup>.** <sup>1</sup>South China Agricultural university, Wushan, Tianhe, Guangzhou 510642, China; <sup>2</sup>Leeds university, Leeds, LS2 9JT,UK

11:30 From *Nosema bombycis* rDNA organization to revise the *Nosema* isolates in Taiwan. **Chih-Yuan Wang, Wei-Fone Huang and Chung-Hsiung Wang.** Department of Entomology, National Taiwan University, 106, Taipei, Taiwan

12:00 Impact of *Nosema sp.* infection on nutritional physiology and growth of the tasar silkworm *Antheraea mylitta*. **Sudhansu Sekhar Rath, Mrinal Kanti Singh and Suryanarayana N.** Central Tasar Research and Training Institute, Piska Nagri, Ranchi-835 303, Jharkhand, INDIA

**10:30-12:30, Wednesday Meeting Center**

**Contributed Papers: Bacteria 3**

**Moderator : Dafang Huang**

10:30 Identification of *Bacillus cereus* internalin and other candidate virulence genes specifically induced during infection in insects. **Nadine Daou, Sinda Fedhila, Christina Nielsen-LeRoux and Didier Lereclus.** Unité Génétique Microbienne et Environnement, INRA, La Minière, 78285 Guyancourt cedex, France

10:45 **STU** Preliminary Characterization of a thermostable DNA polymerase I from a

mesophilic *Bacillus sphaericus* strain C3-41. **Han Bei, Hu Xiaomin, Liu Haizhou, Cai Yajun, Yuan Zhiming.** Wuhan Institute of Virology, Chinese Academy of Science, Wuhan 430071, China

11:00 **STU** Identification of three zwittermicin A Biosynthesis-Related Genes from *Bacillus thuringiensis* YBT-1520. **Changming Zhao, Yi Luo, Chunxu Song, Hui Zeng, Ziniu Yu and Ming Sun.** State Key Laboratory of Agricultural Microbiology, College of Life Science and Technology, Huazhong Agricultural University, Wuhan 430070, Hubei, People's Republic of China

11:15 Amino acid substitutions in aA and aC of Cyt2Aa2 alter hemolytic activity and host specificity. **Boonhiang Promdonkoy<sup>1</sup>, Amporn Rungrod<sup>1</sup>, Patcharee Promdonkoy<sup>1</sup>, Wanwarang Pathaichindachote<sup>1</sup>, Chartchai Krittanai<sup>2</sup> and Sakol Panyim<sup>2</sup>.** <sup>1</sup>National Center for Genetic Engineering and Biotechnology, 113 Paholyothin Road, Klong 1, Klong Luang, Pathumthani 12120, Thailand; <sup>2</sup>Institute of Molecular Biology and Genetics, Mahidol University, Salaya Campus, Nakhonpathom 73170, Thailand

11:30 **STU** Cloning and expression of *gabT* and *gabD* of *Bacillus thuringiensis* YBT1520. **Li Zhu<sup>1</sup>, FuPing Song<sup>2</sup>, Jie Zhang<sup>2</sup> and DaFang Huang<sup>1</sup>.** <sup>1</sup>Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing 100081, People's Republic of China; <sup>2</sup>State Key Laboratory for Biology of Plant Diseases and Insect Pests, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing 100094, People's Republic of China

11:45 **STU** Expression of *Vitreoscilla* hemoglobin gene in *Bacillus thuringiensis* improve the cell density and insecticidal crystal proteins yield. **Feng Liang, Chen Shouwen, Sun Ming, Yu Ziniu.** State Key Laboratory of Agricultural Microbiology, National Engineering Research Center for Microbial Pesticides, Huazhong Agricultural University, Wuhan, 430070, P.R.China

12:00 **STU** The preparation of the HBF-1 polyclonal antibody and its application to detection of the protoxin in soil. **Rui-hua Wu<sup>1,2</sup>, Shu-liang Feng<sup>2</sup>, Guo-xun Li<sup>3</sup>, Rong-yan Wang<sup>2</sup>, Jin-yao Wang<sup>2</sup>, Wei-ping Cao<sup>2</sup>, Lin-xin Du<sup>2</sup> and Jian Song<sup>2</sup>.** <sup>1</sup>Feng Shu-liang, Institute of Plant Protection Hebei Academy of Agriculture

and Forestry Sciences, Baoding 071000;  
<sup>2</sup>College of Plant Protection, Agricultural University of Hebei, Baoding 071001, China;  
<sup>3</sup>Laiyang Arricultural College, Qingdao 266109, China

12:15 **STU** Insecticidal toxicology of HBF-1 strain from *Bacillus thuringiensis* on *Anomala corpulenta* and *A. exoleta* larvae. **Jian Song<sup>1</sup>, Shu-liang Feng<sup>1</sup>, Rong-yan Wang<sup>1</sup>, Jin-yao Wang<sup>1</sup>, Wei-ping Cao<sup>1</sup>, Li-xin Du<sup>1</sup>, Jie Zhang<sup>2</sup> and Fu-ping Song<sup>2</sup>**. <sup>1</sup>Feng Shu-liang, Institute of Plant Protection, Hebei Academy of Agricultural And Forestry Sciences, Baoding 071000

**10:30-12:30, Wednesday Nanyuan Meeting Room**  
**Contributed Papers: Microbial Control 1**  
**Moderators: Wendy Gelernter and Svetlana Gouli**

10:30 Microbial insecticides: some thoughts on history, commercialization and the future. **Wendy Gelernter<sup>1</sup>**. <sup>1</sup>PACE Consulting, San Diego, CA 92109 USA

10:45 Lessons Learned from LUBILOSA. **Roy Bateman<sup>1</sup>**. <sup>1</sup>IPARC, Imperial College London, Silwood Park Campus, Ascot, Berks, SL5 7PY, UK

11:00 Ecological mechanism of sustainable pest control in pine plantation ecosystem. **Zengzhi Li, Meizhen Fan, Degui Ding, Bin Wang and Baoyu Han**. Department of Forestry, Anhui Agricultural University, Hefei, Anhui 230036, P. R. China

11:15 **STU** Production of biomass and shelf life screening of the lepidopteran specific entomopathogenic fungi *Nomureae rileyi*. **Akbar Ali khan Pathan, Narasimha Reddy Parine and Uma Devi Koduri**. <sup>1</sup>Andhra University, Department of Botany, Andhra University, Visakhapatnam, India-530003

11:30 **STU** Expression and Characterization of a novel vegetative insecticidal protein gene of *Bacillus thuringiensis*. **Liang Xiao, Yuehua Chen and Jun Cai**. Tianjin Key Laboratory of Microbial Functional Genomics, Department of Microbiology, College of Life Sciences, Nankai University, Tianjin 300071, China

11:45 **STU** A structured model for the entire fermentation of *Bacillus thuringiensis* var. *kurstaki*. **Ana Karin Navarro and Fermín**

**Pérez-Guevara**. CINVESTAV, Department of Biotechnology, Av. IPN 2508, San Pedro Zacatenco, Mexico City, México. PC 07360

12:00 **STU** Screening and breeding of *Bacillus thuringiensis* subsp. *kurstaki* with high toxicity against *Spodoptera exigua*. **Zhang Xiao-peng, Gong yu-hua, Chen Shou-wen\*, Yu Zi-niu**. State Key Laboratory of Agricultural Microbiology, Huazhong Agricultural University, Wuhan, 430070, China

**10:30-12:30, Wednesday Multifunctional Hall**  
**Contributed Papers: Viruses 3**  
**Moderators: David A Theilmann and Linda Guarino**

10:30 Baculovirus immediate early 1 protein is a broad-spectrum bridge for enhancer function *in trans*. **Yin Chen, Xu'ai Lin, Yongzhu Yi and Zhifang Zhang**. <sup>1</sup>Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing, 100081, China

10:45 Baculovirus genes involved in BmNPV *ubiquitin* gene expression in transient expression assays. **Xu'ai Lin, Yin Chen, Yongzhu Yi and Zhifang Zhang**. <sup>1</sup>Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing, 100081, China

11:00 **STU** Functional analysis of the AcMNPV budded virus regulatory protein EXON0. **Minggang Fang<sup>1</sup>, Xiaojiang Dai<sup>2</sup> and David A Theilmann<sup>1,2</sup>**. <sup>1</sup>Department of Plant Science, Faculty of Land and Food System, University of British Columbia, Vancouver, B.C., Canada V6T 1Z4, Vancouver, B.C., Canada V6T 1Z4; <sup>2</sup>Pacific Agri-Food Research Centre, Agriculture and Agri-Food Canada, Summerland, B.C., Canada V0H 1Z0

11:15 **STU** Functional comparison of the *Autographa californica* multiple nucleopolyhedrovirus transcription factors IE0 and IE1. **Yingchao Nie<sup>1</sup> and David A Theilmann<sup>1,2</sup>**. <sup>1</sup>Department of Plant Science, Faculty of Land and Food System, University of British Columbia, Vancouver, B.C., Canada V6T 1Z4; <sup>2</sup>Pacific Agri-Food Research Centre, Agriculture and Agri-Food Canada, Summerland, B.C., Canada V0H 1Z0

11:30 **STU** *Lef-2* dual role in DNA replication and late gene expression during baculovirus-infection. **Clare Allen<sup>1,2</sup>, Linda King<sup>2</sup> and Robert Possee<sup>1</sup>**. <sup>1</sup>NERC Centre for Ecology &

- Hydrology, Mansfield Road, Oxford, OX1 3SR, UK; <sup>2</sup>School of Biological and Molecular Sciences, Oxford Brookes University, Headington, Oxford, OX3 0BP UK)
- 11:45 Role of the RNA triphosphatase domain of LEF-4 in late gene expression and viral replication. **Yi Li and Linda Guarino**. <sup>1</sup>Texas A&M University, Department of Entomology, 2475 TAMU, Texas A&M University, College Station, TX 77840
- 12:00 **STU** Characterizing the region of the polyhedrin promoter affected by a few polyhedra mutant baculovirus. **Carolyn Pritchard<sup>1,2</sup>, Barbara Kelly<sup>1</sup>, Linda King<sup>2</sup>, Rosie Hails<sup>1</sup> and Robert Possee<sup>1</sup>**. <sup>1</sup>NERC Centre of Ecology and Hydrology, Mansfield Road, Oxford, OX1 3SR, UK; <sup>2</sup>Oxford Brookes University, Headington Campus, Gipsy Lane, Oxford, OX3 0BP, UK
- 12:15 Unique expression strategy of cricket denonucleosis (AdDNV) genome. **Peter Tijsen<sup>1</sup>, Yi Li<sup>2</sup>, Zoltan Zadori<sup>1</sup>, Françoise-Xaviere Jousset<sup>3</sup>, Jozsef Szelei<sup>1</sup>, Mohamed El-Far<sup>1</sup>, Joseph Woodring<sup>4</sup>, Regina G. Kleespies<sup>5</sup> and Max Bergoin<sup>3</sup>**. <sup>1</sup>INRS-Institut Armand-Frappier, Laval QC, Canada H7V 1B7; <sup>2</sup>Huazhong Normal University, Wuhan, 430079 P.R. China; <sup>3</sup>Université Montpellier II, Montpellier, 34095 France; <sup>4</sup>Universität Bayreuth, Bayreuth, 95440 Germany; <sup>5</sup>Federal Biological Research Centre for Agriculture and Forestry, 64287 Darmstadt, Germany
- 12:30-14:00 Wednesday, **Lunch** *Haitiangong Dining-Room*  
**Setting up Posters** *Meeting Center*
- 14:00-16:00 Wednesday Meeting Center**  
**Symposium: Bacteria in Bio-control in Asia: natural and Bio-tech strains (Bacteria Division)**  
**Organizer: Ray Akhurst**  
**Moderator: D.H. Dean**
- 14:00 Application of mosquitocidal *Bacillus sphaericus* and the resistance management in China. **Zhiming Yuan**. Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, 430071, China
- 14:30 Transgenic bacteria expressing combinations of genes from *Bacillus thuringiensis*. **Arieh Zaritsky and Eitan Ben-Dov**. Ben-Gurion University of the Negev, Department of Life Sciences, Ben-Gurion University of the Negev, POB 653, Be'er-Sheva 84105, Israel
- 15:00 Microbial control of scarabs in Japan. **Shin-ichiro Asano<sup>1</sup>, Hisanori Bando<sup>1</sup>, Noriko Shisa<sup>2</sup>, Katsuyoshi Takeuchi<sup>2</sup> and Toshihiko Iizuka<sup>3</sup>**. <sup>1</sup>Division of Applied Biosciences, Graduate School of Agriculture, Hokkaido University, Sapporo, Hokkaido 060-8589, Japan; <sup>2</sup>SDS-Biotech KK, Tukuba Research and Development Center, Tsukuba, Ibaraki 300-2646, Japan; <sup>3</sup>Hokuren Agricultural Research Institute, Naganuma, Hokkaido 069-1317, Japan
- 15:30 Toxicity of *Bacillus thuringiensis* crystal proteins against plant root-knot nematode. **Ziquan Yu, Suxia Guo, Ziniu Yu, Ming Sun**. State Key Laboratory of Agricultural Microbiology, College of Life Science and Technology, Huazhong Agricultural University, Wuhan 430070, PR China
- 14:00-16:00 Wednesday Nanyuan Meeting Room**  
**Contributed Papers: Fungi 3**  
**Moderators: Tariq M Butt and Mingguang Feng**
- 14:00 Laboratory bioassays of entomopathogenic fungi for control of western flower thrips *Franklinella occidentalis* in horticultural growing media. **Minshad Ali Ansari<sup>1</sup>, Michael Brownbridge<sup>2</sup>, Farooq Ali Shah<sup>1</sup>, Mark Whittaker<sup>3</sup>, Munoo Prasad<sup>4</sup> and Tariq M Butt<sup>1</sup>**. <sup>1</sup>Department of Biological Science, University of Wales, Swansea, SA2 8PP, UK; <sup>2</sup>AgResearch Ltd, PO Box 60, Lincoln, New Zealand; <sup>3</sup>Koppert Biological Systems, Suffolk, CB9 8QP, UK; <sup>4</sup>Board Na Mona Horticulture Division, Research Centre, Main Street, Newbridge, Co. Kildare, Ireland
- 14:15 Field evaluation of *Beauveria bassiana* isolates from *Lygus* spp. for control of *Lygus* spp. (Hemiptera: Miridae). **Jarrold E. Leland<sup>1</sup>, Michael R. McGuire<sup>2</sup>, Tina G. Teague<sup>3</sup>, Jennifer Lund<sup>3</sup>, Steinkraus C. Donald<sup>4</sup> and Gore Jeff<sup>1</sup>**. <sup>1</sup>USDA-ARS, SIMRU, NBCL, 59 Lee Road, Stoneville, MS 38776, USA; <sup>2</sup>USDA-ARS, Northern Plains Area, NRRC 2150 Centre Avenue, Building D, Suite 300, Fort Collins, CO 80526-8119, USA; <sup>3</sup>College of Agriculture, Arkansas State University, P.O. Box 2340, State University, AR, 72467; <sup>4</sup>Department of Entomology, University of Arkansas, 319 Agricultural Building, University of Arkansas, Fayetteville, AR 72701

14:30 Grain-Based Production of the Entomopathogenic fungus *Nomuraea rileyi*. **David Holdom** and **Hauxwell Caroline**.

<sup>1</sup>Department of Primary Industries and Fisheries, 80 Meiers Road, Indooroopilly, Queensland, Australia 4068

14:45 Evaluation of the potential of native fungal isolates and *Metrahizium anisopliae* var. *acidum* for the greater wax moth, *Galleria mellonella* (L). **Namusana Hellen**, **Emiru Sevoum** and **Bekele Jembere**. Department of Biology, Addis Ababa University, P.O.Box 1176, Addis Ababa, Ethiopia

15:00 Assessment toxicity of *Beauveria bassiana* blastospores against coddling moth *Cydia pomonella* (Lepidoptera: Tortricidae) in laboratory. **García-Gutiérrez Cipriano**<sup>1</sup>, **Solis-Soto Aquilés**<sup>2</sup>, **Galán-Wong Luis J.**<sup>3</sup>, **González-Maldonado Ma. Berenice**<sup>1</sup> and **Medrano-Roldán Hiram**<sup>2</sup>.

<sup>1</sup>CIIDIR-COFAA-IPN, Sigma s/n Fracc. 20 de Nov. II. C. P. 34220. Durango, Dgo. México.; <sup>2</sup>ITD, Blvd. Felipe Pescador No. 1830 C. P. 34080. Durango, Dgo. México.; <sup>3</sup>UANL, San Nicolás de los Garza, N. L. C.P. 66450. México

15:15 **STU** Enhanced efficiency of *Beauveria bassiana* blastospore-based transformation system by restriction enzyme-mediated integration. **Qiong JIANG**, **Sheng-Hua YING** and **Ming-Guang FENG**. <sup>1</sup>Institute of Microbiology, College of Life Sciences, Zhejiang University, Hangzhou, Zhejiang, 310058, China

15:30 **STU** Pathogenicity of *Beauveria bassiana* towards Fuller's rose weevil larvae in soil. **Carolyn Mander**<sup>1</sup>, **Trevor Jackson**<sup>2</sup> and **Bruce Chapman**<sup>1</sup>. <sup>1</sup>Bio-Protection and Ecology Division, PO Box 84, Lincoln University, Canterbury, New Zealand; <sup>2</sup>AgResearch, PO Box 60, Lincoln, Canterbury, New Zealand

15:45 **STU** Variation in carbendazim resistance and ovicidal activity of *Paecilomyces fumosoroseus* strains against *Tetranychus cinnabarinus*. **Wei-Bing Shi**<sup>1</sup> and **Ming-Guang Feng**<sup>1, 2</sup>. <sup>1</sup>Institute of Insect Science, College of Agriculture and Biotechnology, Hangzhou, Zhejiang, 310029, China; <sup>2</sup>Institute of Microbiology, College of Life Sciences, Zhejiang University, Hangzhou, Zhejiang, 310058, China

#### Contributed Papers: Viruses 4

**Moderators: Robert R Granados and Yi Pang**

14:00 **STU** Identification and analysis of a viral-like chitinase gene isolated from *Spodoptera exigua*. **William Ian Tyne**, **Xiahong Yu** and **Robert D Possee**. Centre for Ecology and Hydrology, Oxford, CEH Oxford, Mansfield Road, Oxford, United Kingdom, OX1 3SR

14:15 Insect cell culture as protein factories: progress and challenges. **Robert R Granados**<sup>1</sup> and **Guoxun Li**<sup>2</sup>. <sup>1</sup>Boyce Thompson Institute, Tower Road, Cornell Univ., Ithaca, NY 14853-1801; <sup>2</sup>Liayang Agricultural College, Qingdao, Shandong Province, 266109, P.R. China

14:30 Advanced baculovirus expression vectors enabling easy and fast purification of recombinant proteins. **Jae Young Choi**<sup>1</sup>, **Yang-Su Kim**<sup>1</sup>, **Heekyu Choi**<sup>1</sup>, **Jong Yul Roh**<sup>1</sup>, **Joong Nam Kang**<sup>1</sup>, **Yong Wang**<sup>1</sup>, **Soo Dong Woo**<sup>2</sup>, **Byung Rae Jin**<sup>3</sup> and **Yeon Ho Je**<sup>1</sup>. <sup>1</sup>School of Agricultural Biotechnology, Seoul National University, Seoul 151-742, Korea; <sup>2</sup>College of Agriculture, Life Sciences, Chungbuk National University, Cheongju 361-763, Korea; <sup>3</sup>College of Natural Resources and Life Science, Dong-A University, Busan 604-714, Korea

14:45 The establishment of a controllable expression vector system in baculovirus. **Jui-Ching Wang**<sup>1</sup> and **Yu-Chan Chao**<sup>1,2</sup>. <sup>1</sup>Institute of Molecular Biology, Academia Sinica, No. 128, Sec. 2, Academia Rd. Nankang, Taipei 115, Taiwan, ROC; <sup>2</sup>College of Life Sciences, National Chung Hsing University, Taichung 40227, Taiwan, ROC

15:00 Antiviral effect of extracts of *Spondias mombin* and *Newbouladi laevis* on the infectivity of cowpea aphid borne mosaic virus (CABMV) genus potyvirus. **Chinwe C. Ukoha**<sup>1</sup>, **Godfrey E. Ezeifeke**<sup>2</sup> and **Chinyere N. Umeaku**<sup>1</sup>. <sup>1</sup>Dept. of Microbiology, Anambra State, University of Science and Technology, Uli, Nigeria; <sup>2</sup> Dept. of Applied Microbiology & Brewing,, Nnamdi Azikiwe University, Awka, Nigeria.

15:15 **STU** A Cell Line (NTU-MV) established from *Maruca vitrata* (Lepidoptera: Pyralidae): characterization, viral susceptibility, and polyhedra production. **Shih Chia Yeh**<sup>1</sup>, **Song Tay Lee**<sup>2</sup>, **Chih Yu Wu**<sup>1</sup> and **Chung Hsiung**

**14:00-16:00 Wednesday Multifunctional Hall**

**Wang<sup>1</sup>**. <sup>1</sup>Department of Entomology, National Taiwan University, Room 105, No. 27, Lane 113, Sec. 4, Roosevelt Rd., Taipei, Taiwan (ROC) 106; <sup>2</sup>Department of Biotechnology, Southern Taiwan University of Technology, No.1, Nantai St, Yung-Kang City, Tainan Taiwan 710 Roc

15:30 **STU** Study the infectivity of budded viruses of wild type and recombinant HearNPVs by quantitative PCR. **Huiyuan Wang, Manli Wang, Wentao Dai, Fei Deng, Zhihong Hu and Hualin Wang**. <sup>1</sup>State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, Hubei, 430071, P. R. China

15:45 A cytoplasmic polyhedrosis virus isolated from the pine processionary caterpillar, *Thaumetopoea pityocampa*. **Ikbal Agah Ince, Remziye Nalcacioglu, Ismail Demir and Zihni Demirbag**. <sup>1</sup>Karadeniz Technical University, Department of Biology, Faculty of Arts and Sciences, Karadeniz Technical University, 61080, Trabzon, Turkey

16:00-16:30 Wednesday, **Coffee Break**  
**Setting up posters** Meeting Center

**16:30-18:30 Wednesday** Meeting Center  
**Poster Session II**

## **Bacteria II**

BP18 Cloning and characterization of the STAT gene from *Hyphantria cunea*. **Hong Ja Kim<sup>1</sup>, Yong Min Kwon<sup>1</sup>, Yong Il Kim<sup>1</sup>, Yeon Soo Han<sup>2</sup>, In Hee Lee<sup>3</sup>, Beong Rae Jin<sup>4</sup>, Young Jin Kang<sup>5</sup> and Sook Jae Seo<sup>1</sup>**. <sup>1</sup>Division of Applied Life Science, Gyeongsang National University, Jinju, Gyeongnam, 660-701, Korea; <sup>2</sup>Department of Agricultural Biology, Chonnam National University, Bukgu, Gwangju, 500-757, Korea; <sup>3</sup>Department of Bio-Technology, Hoseo University, Asan, Chungnam, 336-795, Korea; <sup>4</sup>College of Natural Resources and Life Science, Dong-A University, Busan, 604-714, Korea; <sup>5</sup>Department of Pharmacology, Yeungnam University, Gyeongsan, Gyeongbuk, 712-749, Korea

BP19 Comparative analysis of two attacin genes of *Hyphantria cunea*. **Yong Min Kwon<sup>1</sup>, Hong Ja Kim<sup>1</sup>, Yong Il Kim<sup>1</sup>, Yeon Soo Han<sup>2</sup>, In Hee Lee<sup>3</sup>, Young Jin Kang<sup>4</sup>, Hyang Mi Cheon<sup>1</sup> and Sook Jae Seo<sup>1</sup>**. <sup>1</sup>Division of Applied Life Science, Gyeongsang National University, Jinju, Gyeongnam, 660-701, Korea; <sup>2</sup>Department of

Agricultural Biology, Chonnam National University, Gwangju, 500-757, Korea;

<sup>3</sup>Department of Bio-Technology, Hoseo University, Asan, Chungnam, 336-795, Korea;

<sup>4</sup>Department of pharmacology, Yeungnam University, Gyeongsan, Gyeongbuk;

<sup>5</sup>Southern Forest Research Center, Korea Forest Research Institute, Jinju, Gyeongnam, 660-300, Korea

BP20 Migration of *Bacillus thuringiensis* towards bean leaves. **Pau Maduell<sup>1,2</sup>, Gemma Armengol<sup>1</sup>, Montserrat Llagostera<sup>2</sup>, Steve Lindow<sup>3</sup> and Sergio Orduz<sup>1,4</sup>**. <sup>1</sup>Biotechnology and Biological Control Unit, Corporación para Investigaciones Biológicas, Carrera 72A No. 78B-141, Medellín, Colombia; <sup>2</sup>Microbiology Unit, Department of Genetics and Microbiology, Universitat Autònoma de Barcelona, Bellaterra, Barcelona, Spain; <sup>3</sup>Department of Plant and Microbial Biology, University of California, Berkeley, California; <sup>4</sup>Facultad de Ciencias, Universidad Nacional de Colombia sede Medellín, Medellín, Colombia

BP21 A Mini-Replicon from pBtoxis of *Bacillus thuringiensis* subsp. *israelensis*. **Mujin Tang<sup>1</sup>, Dennis K Bideshi<sup>1</sup>, Hyun-Woo Park<sup>2</sup> and Brian A Federici<sup>1</sup>**. <sup>1</sup>Department of Entomology, University of California, Riverside, Riverside, California, USA, 92521; <sup>2</sup>John A. Mulrennan, Sr., Public Health Entomology Research and Education Center, Florida A & M University, Panama City, Florida, USA, 32405

BP22 Trisodium citrate influenced productions of thuringiensin, PHB and heat in cultivation of *Bacillus thuringiensis* YBT-032 cells. **Zhi Wang<sup>1</sup>, Shouwen Chen<sup>1</sup>, Jun Yao<sup>2</sup>, Ziniu Yu<sup>1</sup>**. <sup>1</sup>Huazhong Agricultural University, College of Life Science and Technology, State Key Laboratory of Agricultural Microbiology, National Engineering Research Center for Microbial Pesticides, Wuhan, 430070, P.R. China; <sup>2</sup>China University of Geosciences, School of Environmental Studies, Wuhan, 430074, P.R. China

BP23 Cloning a Novel Crystal Protein Gene from a “non-insecticidal” *Bacillus thuringiensis* strain YBT978. **Zhenyu Zhang, Suxia Guo, Ziniu Yu, Ming Sun**. State Key Laboratory of Agricultural Microbiology, College of Life Science and Technology, Huazhong Agricultural University, Wuhan 430070, P. R. China

BP24 Synergism between Thuringiensin and CryIAa, CryIAc, Cry1B and Cry1C against

*Helicoverpa armigera* and *Spodoptera exigua*.

**Dong Chunming, Sun Ming, Ruan Lifang, Yu Ziniu\***. State Key Laboratory of Agricultural Microbiology, Huazhong Agricultural University, Wuhan 430070, China; National Engineering Research Centre for Microbial Pesticides, Huazhong Agricultural University, Wuhan 430070, China

BP25 Characterization of the replication of plasmid pBMB2062 from the YBT1520 strain of *Bacillus thuringiensis*. **Xiaojin Liu, Ming Sun, Ziniu Yu**. The State Key Laboratory of Agricultural Microbiology Huazhong Agricultural University, Wuhan 430070, P.R.China

BP26 Physiological Characterization of Accumulated Poly- $\beta$ -hydroxybutyrate(PHB) in *Bacillus thuringiensis*. **Chen Deju, Yan Jin, Chen Shouwen, Sun Ming, Yu Ziniu**. State Key Laboratory of Agricultural Microbiology, Huazhong Agricultural University, Wuhan, China

BP27 Protective Effect of Poly ( $\gamma$ -glutamic acid) on *Bacillus thuringiensis* Active Components Against High Temperature and UV Irradiation. **Wu Guangtao, Ji Zhixia, Chen Shouwen\* and Yu Ziniu**. State Key Laboratory of Agricultural Microbiology, Huazhong Agricultural University, Wuhan, China

BP28 Study on reconstruction of flexible polypeptide linker about scFv **Zheng Zeng-jie and Wang Shi-hua** Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, and College of Life Science, Fujian Agriculture and Forestry University, Fuzhou, China, 350002

BP29 **STU** *Spodoptera exigua* selection using a marginally toxic Cry protein provided a wide range of toxin resistance. **Patricia Hernandez-Martinez and Baltasar Escriche**. Departamento de Genetica, Universitat de Valencia, Dr. Moliner 50, 46100-Burjassot (Valencia), Spain

BP30 **STU** Characterization of Mn superoxide dismutase cDNA from *Hyphantria cunea*. **Yong Il Kim<sup>1</sup>, Hong Ja Kim<sup>1</sup>, Yong Min Kwon<sup>1</sup>, Yeon Soo Han<sup>2</sup>, In Hee Lee<sup>3</sup>, Yong Jin Kang<sup>4</sup> and Sook Jae Seo<sup>1</sup>**. <sup>1</sup>Division of Applied Life Science, Gyeongsang National University, Jinju, Gyeongnam, 660-701, Korea; <sup>2</sup>Department of Agricultural Biology, Chonnam National University, Buk-gu, Gwangju, 500-757, Korea; <sup>3</sup>Department of

Bio-Technology, Chonnam National University, Asan, Chungnam, 336-795, Korea; <sup>4</sup>Department of Pharmacology, Yeungnam University, Gyeongsan, Gyeongbuk, 712-749, Korea

BP31 **STU** **Transferrin inhibits stress-induced apoptosis in a beetle\***. Bo Yeon **Kim<sup>1</sup>**, Hung Dae Sohn<sup>1</sup>, Byung Rae Jin<sup>1</sup>, Kwang Sik Lee<sup>1</sup>, Hong Ja Kim<sup>2</sup>, Sook Jae Seo<sup>2</sup>, Yong Soo Choi<sup>1</sup>, Young Moo Choo<sup>1</sup>, Young Joo Kim<sup>1</sup>, Yeon Ho Je<sup>3</sup> and Doh Hoon Kim<sup>1</sup>. <sup>1</sup>College of Natural Resources and Life Science, Dong-A university, Busan, 604-714, Korea; <sup>2</sup>Division of Applied Life Science, Gyeongsang National University, Jinju, Korea; <sup>3</sup>School of Agricultural Biotechnology, Seoul National University, Seoul, Korea

BP32 **STU** Plasmid transfer among *Bacillus cereus* group strains within lepidopteran larvae. **Yuan Yongming<sup>1</sup>, Hu Xiaomin<sup>1</sup>, Zheng Dasheng<sup>1</sup>, Bjarne Munk Hansen<sup>2</sup>, Yuan Zhiming<sup>1</sup>**. <sup>1</sup>Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan 430071, China; <sup>2</sup>National Environmental Research Institute, 4000 Roskilde, Denmark

Study on the isolation of endogenous fungus producing anti-termite compounds from *Juniperus virginiana* L. and *Chamaecyparis lawsoniana* (A.Murr.) Parl. **Dong-Po Zhou<sup>1</sup>, Wen-Xiang Ping<sup>1</sup>, Kai Zhao<sup>1</sup>, Qiang Li<sup>1</sup>, Jun Liu<sup>1</sup>, Ya-Hong Han<sup>1</sup>, Chung Y. Hse<sup>2</sup>**. College of life Science<sup>1</sup>, Hei Longjiang University, 74 Xuefu Road Harbin 150080 China; Southern Research Station Headquarters<sup>2</sup>, Forest Service, United States Department of Agriculture, Louisiana 70803

Location of the *thu* gene responsible for synthesis of extrotoxin (thuringiensin) in *Bacillus thuringiensis* CT43. **Lifang Ruan, Chunming Dong, Xiaoyan Liu, Ming Sun, Ziniu Yu**. State Key Laboratory of Agricultural Microbiology, College of Life Science and Technology, Huazhong Agricultural University, Wuhan 430070, Hubei, People's Republic of China

## **Fungi II**

FP11 Identification of insect pathogenic fungus, *Cordyceps sphecocephala*, and its cultivation on host insect, drone of honey bee (*Apis mellifera*). **Sung Hee Nam<sup>1,2</sup>, Chun Ru Li<sup>1</sup>, In Pyo Hong<sup>2</sup>, Kyu Byoung Sung<sup>2</sup>, Mei-Zhen Fan<sup>1</sup> and Zeng-Zhi Li<sup>1</sup>**. <sup>1</sup>Anhui Agricultural

- University, Hefei, Anhui 230036, P.R.China; <sup>2</sup>National Institute of Agricultural Science and Technology, R.D.A., 441-100, Sedun-Dong, Suwon, Korea
- FP12 Isolation and PCR-based detection of Entomopathogenic Fungus, *Ascospaera apis* from honey bee (*Apis mellifera*) larva and their breeding environment. **Sung Hee Nam<sup>1,2</sup>, Myeong Lyeol Lee<sup>2</sup>, Ji Young Choi<sup>2</sup>, Young Soo Kim<sup>2</sup>, Chun-Ru Li<sup>1</sup>, Mei-Zhen Fan<sup>1</sup> and Zeng-Zhi Li<sup>1</sup>**. <sup>1</sup>Anhui Agricultural University, Hefei, Anhui 230036, P.R.China; <sup>2</sup>National Institute of Agricultural Science and Technology, R.D.A., 441-100, Sedun-Dong, Suwon, Korea
- FP13 Fungi associated with Hemlock Woolly Adelgid, *Adelges tsugae*, and development of the most active isolates for pest control. **Bruce L. Parker, Margaret Skinner, Svetlana Y. Gouli, Brenton H. Teillon, Vladimir V. Gouli and Cheryl Frank**. Entomology Research Laboratory, University of Vermont, 661 Spear Street, Burlington, Vermont 05405-0105, USA
- FP14 Understanding and assessing the complex of fungi impacting the Elongate Hemlock Scale, *Fiorinia externa*, in New England. **Svetlana Y. Gouli, Bruce L. Parker, Margaret Skinner, Rosanna Giordano, Jose Marselino and Vladimir V. Gouli**. Entomological Research Laboratory, University of Vermont, 661 Spear Street, Burlington, Vermont 05405-0105, USA
- FP15 Genetic diversity of Japanese isolates of *Verticillium lecanii* (*Lecanicillium* spp.). **Masanori Koike, Midori Sugimoto and Daigo Aiuchi**. Department of Agro-environmental Science, Obihiro University of Agriculture & Veterinary Medicine, Hokkaido 080-8555, Japan
- FP16 Host range of a fungus associated with epizootic in elongate hemlock scale. **Jose Marselino, Rosanna Giordano, Svetlana Y. Gouli and Vladimir V. Gouli**. Entomological Research Laboratory, University of Vermont, 661 Spear Street, Burlington, Vermont 05405-0105, USA
- FP17 Studies on the infective characters of *Nomuraea viridulus*. **Ho, Shu -Yi<sup>1</sup> and Wen -Feng Hsiao<sup>2</sup>**. <sup>1</sup>Graduate Institute of Biopharmaceutics, National Chiayi University, Chiayi, Taiwan; <sup>2</sup>Department of Bioresources, National Chiayi University, Chiayi, Taiwan
- FP18 **STU** Thermal adaptation of *Metarhizium anisopliae* strains in association with components of their cell wall hydrophobin-like proteins. **Jun LI and Ming-Guang FENG**. Institute of Microbiology, College of Life Sciences, Zhejiang University, Hangzhou, Zhejiang, 310058, China
- FP19 **STU** Variable benzimidazole resistance and thermotolerance of *Beauveria bassiana* are associated with mutations of its beta-tubulin sequence. **Gen ZOU and Ming-Guang FENG**. Institute of Microbiology, College of Life Sciences, Zhejiang University, Hangzhou, Zhejiang, 310058, China
- FP20 **STU** Isolation of ESTs expressed by *Metarhizium anisopliae* in the invasion process of *Plutella xylostella* using RDA. **Israel E Padilla-Guerrero<sup>1</sup>, Dessire Vargas-Gamez<sup>1</sup>, Jose M Zamudio Arroyo<sup>1</sup>, Angélica González-Hernández<sup>1</sup>, Eduardo Salazar-Solis<sup>2</sup> and Juan Carlos Torres-Guzmán<sup>1</sup>**. <sup>1</sup>Instituto de Investigación en Biología Experimental. Facultad de Química. Universidad de Guanajuato, Ap. Postal 187, Noria Alta s/n, Guanajuato, Gto., México; <sup>2</sup>Instituto de Ciencias Agrícolas. Universidad de Guanajuato, Ap. Postal 311, C. P. 36500, Irapuato, Gto., México
- FP21 **STU** Pathogenicity of hybrid strains of *Verticillium lecanii* (*Lecanicillium* spp. ) to eggs of the soybean cyst nematode. **Ryoji Shinva<sup>1</sup>, Ai Watanabe<sup>1</sup>, Daigo Aiuchi<sup>1</sup>, Masanori Koike<sup>1</sup> and Atsuhiko Kushida<sup>2</sup>**. <sup>1</sup>Department of Agro-Environmental Science, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido 080-8555, Japan; <sup>2</sup>National Agricultural Research Center for Hokkaido, Shinsei, Hokkaido 080-0071, Japan
- Histopathological studies of spruce budworm infected by *Hirsutella longicolla* and *Toypocladim niveum*. **Liande Wang<sup>1,2</sup>, Minsheng You<sup>1</sup>, Jian Huang<sup>2</sup>, Xiong Guan<sup>2</sup> and Doug Strongman<sup>3</sup>**. <sup>1</sup>Institute of Applied Ecology, Fujian Agriculture & Forestry University, Fuzhou, 350002, P.R. China; <sup>2</sup>Key Laboratory of Biopesticide and Chemical Biology, MOE., Fujian Agriculture & Forestry University, Fuzhou, 350002, P.R. China; <sup>3</sup>Dept. of Biology, Saint Mary's University, Halifax, B3H3C3, Canada)

Survival of *Beauveria bassiana* on cadavers of

*Monochamus alternatus* adults. **Xue-You HE<sup>1</sup> and Shimazu Mitsuaki<sup>2</sup>**. (<sup>1</sup>Fujian Academy of Forestry, Fuzhou, Fujian, 350012, P.R.China; <sup>2</sup>Forestry and Forest Products Research Institute, Tsukuba, Ibaraki 305-8687, Japan)

University of New Brunswick, Fredericton, New Brunswick, E3B 6C2, Canada; <sup>2</sup>Canadian Forest Service, Atlantic Forestry Centre, P.O. Box 4000, Fredericton, New Brunswick, E3B 5P7, Canada

## **Microbial Control II**

MCP14 Characterisation of a *Bacillus thuringiensis* isolate that is highly toxic to *Eldana saccharina* (Lepidoptera: Pyralidae). **Gustav Bouwer**. School of Molecular and Cell Biology, University of the Witwatersrand, Johannesburg, Private Bag 3, Wits 2050, South Africa

MCP15 Experimental use of *Epinotia aporema* granulovirus (EpaGV) in Argentina. **Marina Biedma<sup>1</sup>, Leticia Ferrelli<sup>1</sup>, Ricardo Salvador<sup>1,2</sup>, Victor Merlo<sup>2</sup>, Graciela Quintana<sup>2</sup>, Victor Romanowski<sup>1</sup> and Alicia Sciocco-Cap<sup>2</sup>**. <sup>1</sup>IBBM, Facultad de Ciencias Exactas, Universidad Nacional de La Plata, 115 y 49, (1900) La Plata, Argentina; <sup>2</sup>IMYZA-CICVyA, Instituto Nacional de Tecnología Agropecuaria (INTA), CC 25, (1712) Castelar, Buenos Aires, Argentina

MCP16 Viability studies for a Brazilian isolate of SfMNPV production in suspension cultures. **Andrea Farias de Almeida<sup>1</sup>, Gorete Ribeiro de Macedo<sup>1</sup>, Zilda Maria A. Ribeiro<sup>2</sup>, Maria Elita B. de Castro<sup>2</sup>, Marlinda Lobo de Souza<sup>2</sup> and Márcia Regina da Silva Pedrini<sup>1</sup>**. <sup>1</sup>PPGEQ/Federal University of Rio Grande do Norte, Natal, RN, Brazil; <sup>2</sup>EMBRAPA Genetic Resources and Biotechnology, Brasília-DF, Brazil

MCP17 Kaolinite effect on spouted bed drying process and baculovirus biopesticide hygroscopicity. **Yvson Costa e Silva<sup>1</sup>, Wilton Menezes Andrade Jr.<sup>1</sup>, Carlos Henrique Xavier<sup>1</sup>, Flávio Moscardi<sup>2</sup>, Marlinda Lobo de Souza<sup>3</sup>, Maria de Fátima Dantas de Medeiros<sup>1</sup> and Márcia Regina Da Silva Pedrini<sup>1</sup>**. <sup>1</sup>PPGEQ/Universidade Federal do Rio Grande do Norte, Natal, RN, Brazil; <sup>2</sup>EMBRAPA Soya, Londrina, PR, Brazil; <sup>3</sup>EMBRAPA Genetic Resources and Biotechnology, Brasília, DF, Brazil

MCP18 The use of a nucleopolyhedrovirus for the suppression of its natural host, the balsam fir sawfly (*Neodiprion abietis* Harris). **Roger W Graves<sup>1</sup>, Dan T Quiring<sup>1</sup> and Christopher J Lucarotti<sup>1,2</sup>**. <sup>1</sup>Faculty of Forestry and Environmental Management, P.O. Box 44555,

MCP19 Susceptibility of *Pyrausta sticticalis* to *Bacillus thuringiensis*-based formulations depending on host plant. **Margarita Shternshis, Irina Andreeva and Bibinur Baitasova**. Department for Biological Control, State Agrarian University, Dobrolubov 160, 630039, Novosibirsk, Russia

MCP20 Development of PCR-RFLP approach using three chitinase genes for the genetic characterization and identification of *Metarhizium* strains. **Vandana Ghormade, Franco Widmer and Juerg Enkerli**. Molecular Ecology, Agroscope FAL Reckenholz, Swiss Federal Research Station for Agroecology and Agriculture, Reckenholzstrasse 191, CH-8046 Zürich, Switzerland

MCP21 Potential of *Lecanicillium* species for dual microbial control of aphids and the cucumber powdery mildew fungus, *Sphaerotheca fuliginea*. **Jeong Jun Kim<sup>1</sup>, Mark S Goettel<sup>1</sup> and Dave Gillespie<sup>2</sup>**. <sup>1</sup>Lethbridge Research Centre, 5403 1st Ave S., Lethbridge, AB, Canada, T1j 4B1; <sup>2</sup>Pacific Agriculture Research Centre, 6947 Number 7 Highway, Agassiz, BC V0M 1A0

MCP22 Impact of SDS in baculovirus occlusion body purification buffer on biological activity. **Hilal Susurluk<sup>1</sup>, Umut Toprak<sup>1,2</sup>, Oktay Gürkan<sup>1</sup>**. <sup>1</sup>University of Ankara, Faculty of Agriculture, Department of Plant Protection, 06110 Dışkapı/Ankara Turkey; <sup>2</sup>Agriculture and Agri-Food Canada, Saskatoon Research Centre, Saskatoon, 107 Science Place, Saskatoon, Saskatchewan, Canada S7N 0X2

MCP23 **STU** The distribution and expression of chitinolytic enzymes from *Bacillus thuringiensis*. **Wei Lu, Qiuming Zhao, Yanling Chen, Qing Chen qing, Jun Cai and Yuehua Chen**. Key Laboratory of Microbial Functional Genomics, Department of Microbiology, College of Life Sciences, Nankai University, Tianjin, 300071, China

MCP24 **STU** Effects of sublethal nucleopolyhedrovirus infection on the metabolic rate of *Helicoverpa armigera* (Lepidoptera: Noctuidae). **Luisa Nardini<sup>1</sup>,**

**Gustav Bouwer<sup>1</sup> and Frances D Duncan<sup>2</sup>.**

<sup>1</sup>School of Molecular and Cell Biology, University of the Witwatersrand, Private Bag 3, 2030, Wits, Johannesburg, South Africa; <sup>2</sup>School of Animal, Plant and Environmental Sciences, University of the Witwatersrand, Private Bag 3, 2030, Wits, Johannesburg, South Africa

MCP25 **STU** Isolation and Characterization of Novel Insecticidal *cryI*-Type Genes from *Bacillus thuringiensis* K1 Strains. **MingShun Li<sup>1</sup>, Yeon Ho Je<sup>2</sup>, Zi Niu Yu<sup>1</sup>, Jae Young Choi<sup>2</sup>, Jong Yul Roh<sup>2</sup>, Hee Jin Shim<sup>2</sup>, Joong Nam Kang<sup>2</sup>, Yong Wang<sup>2</sup>, Yang-Su Kim<sup>2</sup> and Hee Kyu Choi<sup>2</sup>.** <sup>1</sup>State Key Laboratory of Agricultural Microbiology, Huazhong Agricultural University, Lion Street, Hongshan district, Wuhan, China, 430070; <sup>2</sup>School of Agricultural Biotechnology, College of Agriculture and Life Sciences, Seoul National University, San 56-1, Shillindong, Gwanakgu, Seoul 151-742, Korea

MCP26 **STU** Cloning and heterogeneous expression of a *mel* gene from a wild-type melanin-yielding *Bacillus cereus* strain Bt799. **Zhang Jingtao, Yan Jianping, Zheng Dasheng, Cai Quanxin, Yuan Zhiming.** Wuhan institute of Virology, Chinese Academy of Sciences, Wuhan 430071, China

MCP27 Study on the Bioactivities of Plant Extracts against *Lasioderma serricorne*. **Zhao Haigang<sup>1</sup>, Song Jizhen<sup>2</sup>, Xie Jianping<sup>2</sup>, Je Yeon Ho<sup>3</sup>, Jin Byung Rae<sup>4</sup>, Li Jianhong<sup>1\*</sup>.** 1.College of Plant Science and Technology, Huazhong Agricultural University, Wuhan 430070, China; 2. Zhengzhou Tobacco Research Institute, China Tobacco General Company, Zhengzhou 450001, China; 3. School of Agricultural Biotechnology, Seoul National University, Seoul 151-742, Korea; 4. College of Natural Resources and Life Science, Dong-A University, Busan 604-714, Korea

Identification of an insect intestinal mucin from the Lepidopteran peritrophic membrane of *Helicoverpa armigera*. **Junping Wang<sup>1</sup>, Fan Yang<sup>1</sup>, Guoxun Li<sup>1</sup>, Shupeng Gai<sup>1</sup>, Ping Wang<sup>2</sup>, Changyou Li<sup>1</sup>, Hongxu Zhou and Linyou Cheng<sup>1</sup>.** <sup>1</sup>Laiyang agricultural College, Qingdao 266109, P.R. China; <sup>2</sup>Department of Plant Protection, Laiyang agricultural College, Qingdao 266109, P.R. China

## Nematodes

NP1 Gene clone of insecticidal protein from

*Xenorhabdus nematophila* HB310. **Qinying Wang, Ping Song, Ziyang Nangong and Long Cui.** College of Plant Protection, Agricultural University of Hebei, Biocontrol Centre of Plant Diseases and Plant Pests of Hebei Province, Baoding, Hebei 071001, P. R. China

NP2 Insecticidal activity and midgut histopathological effects of *Xenorhabdus nematophila* on *Pontia daplidice*. **Qinying Wang, Ping Song, Jun Yang, Ziyang Nangong and Long Cui.** College of Plant Protection, Agricultural University of Hebei, Biocontrol Centre of Plant Diseases and Plant Pests of Hebei Province, Baoding, Hebei 071001, P. R. China

NP3 Insecticidal activity of the toxins from entomopathogenic nematode symbiotic bacteria. **Huan Wang<sup>1</sup>, Bin Cong<sup>\*2</sup> and hui Dong<sup>2</sup>.** <sup>1</sup>College of biological science and technology, Shenyang Agri. Univ, Shenyang, Liaoning, 110161, China; <sup>2</sup>College of Plant Protection, Shenyang Agri. Univ, Shenyang, Liaoning, 110161, China

NP4 **STU** The application of *Ovomermis sinensis* in cooperation with Bt (*Bacillus thuringiensis*) to the control of *Helicoverpa armigera*. **Jiang-Yi Wang, Hua-Mei Yue, Guo-Xiu Wang and Hong-Tao Wang.** College of Life Science, Central China Normal University, Wuhan, 430079, China

## Viruses II

VP18 Genome sequence and genome organization analyses of *Trichoplusia ni ascovirus 2c* (*Ascoviridae*). **Lihua Wang<sup>1</sup>, Jianli Xue<sup>1</sup>, Basil M. Arif<sup>2</sup> and Xiao-Wen Cheng<sup>1</sup>.** <sup>1</sup>Department of Microbiology, 32 Pearson Hall, Miami University, Oxford, Ohio, 45056 USA; <sup>2</sup>Great Lakes Forestry Center, 1219 Queen St. E., Sault Ste. Marie, Ontario P6A 2E5 Canada

VP19 Presence of nuclear polyhedrosis virus in *Neodiprion sertifer* populations in Latvia. **Liga Jankevica.** Department of Experimental Entomology, Institute of Biology, University of Latvia, Miera iela 3, Salaspils, Riga district, LV 2169, Latvia

VP20 *Choristoneura fumiferana* defective nucleopolyhedrovirus spindlin is a superior model for studying baculovirus GP37-type proteins. **Cailing Liu<sup>1,2</sup>, Peter J Krell<sup>2</sup> and Basil M Arif<sup>1</sup>.** <sup>1</sup>Great Lakes Forestry Centre, Sault Ste. Marie, Ontario, Canada P6A 2E5;

<sup>2</sup>Department of Microbiology, University of Guelph, Guelph, Ontario, Canada N1G 2W1

- VP21 Sequence analysis of the genome of *Maruca vitrata* multicapsid nucleopolyhedrovirus (MaviNPV). **Chih-Yu Wu<sup>1</sup>, Song-Tay Lee<sup>2</sup> and Chung-Hsiung Wang<sup>1</sup>**. <sup>1</sup>Department of Entomology, National Taiwan, 106, Taipei, Taiwan; <sup>2</sup>Department of Biotechnology, Southern Taiwan University of Technology, 710, Tainan, Taiwan
- VP22 Replication of *Bombyx mori* nucleopolyhedrovirus in nonpermissive insect cell lines. **Soo-Dong Woo<sup>1</sup>, Yeon-Ho Je<sup>2</sup> and Byung-Rae Jin<sup>3</sup>**. <sup>1</sup>Department of Plant Medicine, Chungbuk National University, Cheongju 361-763, Korea; <sup>2</sup>School of Agricultural Biotechnology, College of Agriculture & Life Sciences, Seoul National University, Seoul 151-742, Korea; <sup>3</sup>College of Natural Resources and Life Science, Dong-A University, Busan 604-714, Korea
- VP23 Sequence analysis on the genome of the *Choristoneura biennis* entomopoxvirus. **Zhen Li<sup>1</sup>, Peter Krell<sup>2</sup>, Christopher Lucarott<sup>3</sup> and Basil Arif<sup>1</sup>**. <sup>1</sup>Laboratory for Molecular Virology, Great Lakes Forestry Centre/Lakes Forestry, Sault Ste. Marie, Ontario, P6A 2E5, Canada; <sup>2</sup>Dept. of Molecular Cellular Biology, University of Guelph, Guelph, Ontario, N1G 2W1, Canada; <sup>3</sup>Atlantic Forestry Centre, Fredericton, New Brunswick, E3B 5P7, Canada
- VP24 Characterization of a new baculovirus isolated from *Iragoides fasciata* and its infection of TN-5B1-4 cell line. **Li-Rong Yang, Zhang-Nv Yang and Chuan-Xi Zhang**. Institute of Insect Sciences, Zhejiang University, Hangzhou, 310029, China
- VP25 Salivary gland hyperplasia virus of the house fly, *Musca domestica* (Diptera: Muscidae). **Christopher J. Geden<sup>1</sup>, Verena Ulricke Blaeske-Lietze<sup>2</sup> and Drion G. Boucias<sup>2</sup>**. <sup>1</sup>USDA, ARS, CMAVE, 1600 SW 23rd Dr., Gainesville, FL 32607 USA; <sup>2</sup>Univ. of Florida Dept. of Entomol. and Nematol., Building 970, Natural Area Dr, Gainesville, FL 32611 USA
- VP26 Ascertaining the efficiency of granulovirus based bio-pesticides in *Cydia pomonella* and *Adoxophyes orana* control, using PCR based techniques. **Jiban Kumar Kundu, Jitka Stará, Dita Bohdanecká and František Kocourek**. Division of Plant Medicine, Research Institute of Crop Production, Drnovská 507, Prague 6, 161 06 Czech Republic
- VP27 Promoter analysis of *Bombyx mori* nucleopolyhedrovirus Ubiquitin gene. **Xu'ai Lin, Yin Chen, Yongzhu Yi and Zhifang Zhang**. Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing, 100081, China
- VP28 **STU** Identification of baculovirus genes for activation of the *hhl* promoter of Hz-1 virus. **Yueh-Lung Wu<sup>1</sup>, Song-Tay Lee<sup>2</sup> and Yu-Chan Chao<sup>3</sup>**. <sup>1</sup>Institute of biotechnology, National Cheng Kung University, No.1, Ta-Hsueh Road, Tainan 701, Taiwan; <sup>2</sup>Department of Biotechnology, Southern Taiwan University of Technology, No.1, Nantai St, Yung-Kang City, Tainan Taiwan 710; <sup>3</sup>Institute of Molecular Biology, Academia Sinica, 128 Sec.2, Academia Rd, NanKang, Taipei 115 Taiwan
- VP29 **STU** Cloning of a gene encoding *Lymantria xyli* nucleopolyhedrovirus fusion protein and its expression in LD cells. **Hsiu-Wen Pien, Chu-Min Lo and Chung-Hsiung Wang**. Department of Entomology, National Taiwan University, No.1, 4, Sec, Roosevelt Road, Taipei, Taiwan 10617, R.O.C.
- VP30 **STU** Influence of fetal bovine serum on the growth of insect cell cultures and baculovirus. **Jae-Kyung Lee and Soo-Dong Woo**. Department of Plant Medicine, College of Agriculture, Chungbuk National University, Cheongju 361-763, Korea
- VP31 *Spodoptera litura* multicapsid nucleopolyhedrovirus inhibits *Microplitis bicoloratus* polydnavirus-induced host granulocytes apoptosis. **Kaijun Luo<sup>1,2</sup> and Yi Pang<sup>1</sup>**. <sup>1</sup>State key Laboratory of Biocontrol & Institute of Entomology, Sun Yat-sen (Zhongshan), Guangzhou 510275, P. R. China; <sup>2</sup>Agriculture Environment and Resource Research Institute, Yunnan Academy of Agriculture Sciences, Kunming 650205, P.R. China
- VP32 **STU** Expression of a *Microplitis bicoloratus* polydnavirus-encoded protein causes disruption of actin cytoskeleton in lepidopteran insect cells. **Kaijun Luo<sup>1,2</sup> and Yi Pang<sup>1</sup>**. <sup>1</sup>State key Laboratory of Biocontrol & Institute of Entomology, Sun Yat-sen (Zhongshan) university, Guangzhou 510275, P. R. China; <sup>2</sup>Agriculture Environment and Resource Research Institute, Yunnan Academy of

Agriculture Sciences, Kunming 650205, P.R. China

VP33 **STU** Genome analysis of *Cotesia plutellae* bracovirus. **Yang-Su Kim<sup>1</sup>, Jae Young Choi<sup>1</sup>, Jong Yul Roh<sup>1</sup>, Joong Nam Kang<sup>1</sup>, Yong Wang<sup>1</sup>, Heekyu Choi<sup>1</sup>, Soo Dong Woo<sup>2</sup>, Byung Rae Jin<sup>3</sup> and Yeon Ho Je<sup>1</sup>.** <sup>1</sup>School of Agricultural Biotechnology, Seoul National University, Seoul 151-742, Korea; <sup>2</sup>College of Agriculture, Life Sciences, Chungbuk National University, Cheongju 361-763, Korea; <sup>3</sup>College of Natural Resources and Life Science, Dong-A University, Busan 604-714, Korea

VP34 **STU** The evolutionary analysis of *baculoviruses* based on variety evolution rates and function constraint. **Yue Jiang, Fei Deng, Zhihong Hu and Hualin Wang.** State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, Hubei, 430071, P. R. China

VP35 Putative promoters isolated from infectious hypodermal and hematopoietic necrosis virus (IHHNV) of shrimp direct expression of a reporter gene in bacteria, insects and fish cells, and shrimp. **Arun K. Dhar<sup>1</sup>, Nikolai A. Van Beek, Robert A. Bullis, Robert J. Moss and Thomas C. Allnut.** Advanced Bionutrition, 7155 Columbia Gateway Dr., Ste H, Columbia, MD 21046, USA

18:30-20:00 **Dinner** *Haitiangong Dining-Room*

20:00-21:00 Wednesday *Multifunctional Hall*  
**Microbial Control Business Meeting**

21:00-22:00 Wednesday *Multifunctional Hall*  
**Workshop: New Products and Upgrades for Microbial Control: an Industry Update (Microbial Control Division)**  
Convenors: Jeff Lord, Dr Ziwen Yang and Michael Brownbridge

**Thursday, August 31**

**8:00-10:00 Thursday Meeting Center**  
**Symposium: Bt- performance enhancement (Bacteria Division)**  
**Convenor: Yu Cheng Zhu**

8:00 Synergistic Effect of Inorganic salts to Improve the Biological activity of *Bacillus thuringiensis* subsp. *aizawai* NT0423 against *Plutella xylostella*. **Jae Su Kim.** Dongbu Hannong Co. Ltd., Daejeon 305-708, Korea; <sup>2</sup>Seoul National University, Seoul 151-742, Korea.

8:30 A novel function of *Bacillus thuringiensis* Cry1C toxin on insect peritrophic matrix. **Christina Nielsen-LeRoux<sup>1,2</sup>, Christophe Buisson<sup>1</sup> and Didier Lereclus<sup>1</sup>.** <sup>1</sup>INRA, Unité Génétique Microbienne et Environnement, INRA, la Minière, 78285 Guyancourt; <sup>2</sup>Pasteur Institute, Département de Microbiologie, Institut Pasteur, 75724 Paris Cedex 15, France

9:00 Potential use of proteinase inhibitors for insect control and Bt resistance management. **Yu Cheng Zhu.** USDA-ARS-JWDSRC, PO Box 346, 141 Experiment Station Road, Stoneville, Mississippi 38776, USA

9:30 Improved genetically engineered bacteria for controlling mosquito larvae. **B. Federici, D. Bideshi, H. W. Park, J. Johnson, M. Tang, M. Wirth, Y. Sakano.** Department of Entomology and Interdepartmental Graduate Programs in Genetics and Microbiology, University of California, Riverside, California 92521

**8:00-10:00 Thursday Nanyuan Meeting Room**  
**Contributed Papers: Microbial Control 2**  
**Moderators: Carlos A. Blanco and Bo Liu**

8:00 Association of the components of the binary toxin from *Bacillus sphaericus* in solution and with model lipid bilayers. **Panadda Boonserm<sup>1</sup>, Seangduen Moonsom<sup>1</sup>, Chanikarn Boonchoy<sup>2</sup>, Boonhiang Promdonkoy<sup>3</sup>, Krupakar Parthasarath<sup>4</sup> and Jaime Torres<sup>4</sup>.** <sup>1</sup>Institute of Molecular Biology and Genetics, Mahidol University, Salaya, Phuttamonthon, Nakornpathom 73170, Thailand; <sup>2</sup>Institute of Science and Technology for Research and Development, Mahidol University, Salaya, Phuttamonthon, Nakornpathom 73170, Thailand; <sup>3</sup>National Center for Genetic Engineering and Biotechnology, National Science and Technology Development Agency, 113 Paholyothin Road, Klong 1, Klong Luang, Pathumthani 12120, Thailand; <sup>4</sup>School of Biological Sciences, Nanyang Technological University, 60 Nanyang Drive 637551, Singapore

8:15 Mechanism of *Bacillus brevis* against *Fusarium oxysporum* Schl. and Microcapsule approach for its formulated product. **Lan Jiang-lin, Huang Su-fang, Che Jian-mei and Liu Bo\*.** Biocide Center, Institute of Biotechnology, FAAS, Fuzhou 350003, China

- 8:30 Single Nucleotide Polymorphisms (SNPs) in Bt Toxin Binding Genes in Natural Populations of *Heliothis virescens*. **Omaththage P. Perera and Carlos A. Blanco**. Southern Insect Management Research Unit, USDA-ARS, 141 Experiment Station Road, Stoneville, MS 38776, USA
- 8:45 **STU** Secondary structure Analysis of a highly mosquitocidal mutant strain of *Bacillus thuringiensis* LDC-9 from Madurai, South India. **Poornima K Kani, Mahalakshmi Ayyasamy, Sujatha Kabilan and Shenbagarathai Rajaiah**. Lady Doak College, PG Department of Zoology & Research Centre, Lady Doak College, Chinnachokikulam, Madurai, Tamilnadu, India-625002
- 9:00 **STU** Location and identification of *cry* genes in *Bacillus thuringiensis* strain 4.0718. **Zujiao Fu<sup>1</sup>, Yunjun Sun<sup>2</sup>, Xuezhi Ding<sup>3</sup>, Shengbiao Hu<sup>4</sup>, Xiaohong He<sup>5</sup> and Liqiu Xia<sup>\*</sup>**. <sup>1</sup>College of life science, College of Life Science, Hunan Normal University, Changsha 410081, P R China
- 9:15 **STU** Diversity of *B. thuringiensis* strains from Madurai with insecticidal activity against different mosquito species. **Mahalakshmi Ayyasamy, Poornima K Kani, Sujatha Kabilan and Shenbagarathai Rajaiah**. Lady Doak College, PG Department of Zoology & Research Centre, Lady Doak College, Chinnachokikulam, Madurai, Tamilnadu, India, 625002
- 9:30 **STU** Production of thuringiensin by fed-batch culture of *Bacillus thuringiensis* subsp. *darmstadiensis* 032 with an improved pH-control glucose feeding strategy. **Zhou Jing-Wen, Chang Ya-Fei, Yu Zi-Niu, Chen Shou-Wen**. State Key Laboratory of Agricultural Microbiology, Huazhong Agricultural University, Wuhan 430070, P.R. China
- 8:00-10:00 Thursday Multifunctional Hall**  
**Contributed Papers: Viruses 5**  
**Moderators: Jim Maruniak and Peter J. Krell**
- 8:00 Identification of Structural Proteins of *Culex nigripalpus* Nucleopolyhedrovirus (CuniNPV). **Omaththage P. Perera<sup>1</sup>, Terry B. Green<sup>2</sup>, Stanley M. Stevens, Jr.<sup>3</sup>, Susan E. White<sup>2</sup> and James J. Becnel<sup>2</sup>**. <sup>1</sup>Southern Insect Management Research Unit, USDA-ARS, Stoneville, MS 38776, USA; <sup>2</sup>Center for Medical, Agricultural, & Veterinary Entomology, USDA-ARS, 1600 SW 23rd Ave., Gainesville, FL 32608, USA; <sup>3</sup>Proteomics Core, Interdisciplinary Center for Biotechnology Research, University of Florida, Gainesville, FL 32610, USA
- 8:15 The partial genome sequence of *Oryctes rhinoceros* virus. **Yongjie Wang<sup>1</sup>, Monique M. Van Oers<sup>2</sup>, Allan M. Crawford<sup>3</sup>, Just M. Vlask<sup>2</sup> and Johannes A. Jehle<sup>1</sup>**. <sup>1</sup>Laboratory for Biotechnological Crop Protection, Department of Phytopathology, Agricultural Service Centre Palatinate (DLR), 67435 Neustadt an der Weinstrasse, Germany; <sup>2</sup>Laboratory of Virology, Wageningen University, Binnenhaven 11, 6709 PD Wageningen, The Netherlands; <sup>3</sup>AgResearch Invermay Agricultural Centre, Mosgiel, New Zealand
- 8:30 The genomic sequence of the *Gryllus bimaculatus* virus. **Yongjie Wang<sup>1</sup>, Regina G. Kleespies<sup>2</sup>, Alois Huger<sup>2</sup> and Johannes A. Jehle<sup>1</sup>**. <sup>1</sup>Laboratory for Biotechnological Crop Protection, Department of Phytopathology, Agricultural Service Centre Palatinate (DLR Rheinpfalz), 67435 Neustadt an der Weinstrasse, Germany; <sup>2</sup>Federal Biological Research Center for Agriculture and Forestry, Institute for Biological Control, Heinrichstr. 243, 64287 Darmstadt, Germany
- 8:45 **STU** Identification of the Structural Proteins of the Occlusion-derived Virus of HearNPV. **Fei Deng, Ranran Wang, Minggang Fang, Hualin Wang, Xushi Xu, Hanzhong Wang, Xinwen Chen and Zhihong Hu**. State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, Hubei, 430071, P. R. China
- 9:00 An investigation on biochemical variation of two isolates of potato tuber moth granulovirus, *Phthorimaea operculella* granulovirus. **Mohammadreza Rezapanah<sup>1</sup>, Amir Amiri Yekta<sup>1</sup> and Ahmad Dezanian<sup>2</sup>**. <sup>1</sup>Biological Control Research Department, Plant Pests and Diseases Research Institute, Tehran 19395, Iran; <sup>2</sup>Plant Pests & Diseases Research Dept, Semnan Agricultural & Resources Research Center, Semnan, Iran
- 9:15 Transcriptional analysis of *Choristoneura fumiferana* nucleopolyhedrovirus (CfMNPV) genes using an oligonucleotide-based DNA microarray. **Dan-Hui Yang<sup>1</sup>, Basil M Arif<sup>2</sup> and Peter John Krell<sup>1</sup>**. <sup>1</sup>Department of Molecular and Cellular Biology, University of Guelph, 488 Gordon Street, Guelph, Ontario

Canada N1G 2W1; <sup>2</sup>Great Lakes Forestry Centre, 1219 Queen Street East, Sault Ste Marie, Ontario, Canada, P6A 2E5

**Anderson Tan, Raffi Aroian, Xiang-Qian Li.** University of California, San Diego, 9500 Gilman Drive, Mail Code 0349 La Jolla, CA 92093-0349 USA

- 9:30 Identification of baculovirus transactivator for early promoters using viral genomic library. **Yin Chen<sup>1,2</sup>, Xu'ai Lin<sup>2</sup>, Yiyu Lu<sup>1</sup>, Yongzhu Yi<sup>2</sup> and Zhifang Zhang<sup>2</sup>.** <sup>1</sup>Virus Research Institute, Zhejiang Provincial Center for Disease Prevention and Control, Hangzhou, Zhejiang, 310009, China; <sup>2</sup>Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing, 100081, China
- 9:45 **STU** Characterization of a bacmid-derived defective baculovirus with a large deletion in the genome. **Yi Huang<sup>1,3</sup>, Minggang Fang<sup>1</sup>, Xinwen Chen<sup>1</sup>, Ting Li<sup>1</sup>, Just M Valk<sup>2</sup>, Zhihong Hu<sup>1</sup> and Hanzhong Wang<sup>1</sup>.** <sup>1</sup>Wuhan Institute of Virology, Chinese Academy of Sciences, State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, 430071, People's Republic of China.; <sup>2</sup>Laboratory of Virology, Wageningen University, Laboratory of Virology, Wageningen University, Binnenhaven 11, 6709 PD Wageningen, The Netherlands; <sup>3</sup>Graduate School of Chinese Academy of Sciences, Graduate School of Chinese Academy of Sciences, Beijing, 100039, People's Republic of China.
- 10:00-10:30 **Coffee Break**
- 10:15-10:30 Thursday Meeting Center**  
**Lecture: Edward A. Steinhaus, Instigator, Catalyst, and Founder.**  
**Elizabeth W. Davidson.** School of Life Sciences, Arizona State University, Tempe, AZ 85287-4501
- 10:30-12:30 Thursday *Meeting Center*  
**SIP Annual Business Meeting**
- 12:30-14:00 Thursday, **Lunch** *Haitiangong Dining-Room*  
**Student Awards Committee Meeting**
- 14:00-16:00 Thursday Meeting Center**  
**Symposium: Nematodes and Bacteria: from Pathogenicity to Mutualism (Cross-Divisional)**  
**Convenors: Raffi Aroian and Parwinder Grewal**
- 14:00 Bacterial toxin - nematode interactions: using Bt toxins to control parasitic nematodes.
- 14:30 Elucidating the molecular mechanisms of bacteria-host interactions using the *C. elegans* pathogenesis model. **Man-Wah Tan.** Departments of Genetics, and of Microbiology and Immunology, Stanford University School of Medicine, Stanford CA 94305-5120, USA
- 15:00 Virulence of *Moraxella osloensis*, a bacterium associated with the slug-parasitic nematode *Phasmarhabditis hermaphrodita*, to the slug *Deroceras reticulatum*. **P. S. Grewal.** Department of Entomology, Ohio State University, Wooster, OH 44691, USA
- 14:00-16:00 Thursday Nanyuan Meeting Room**  
**Contributed Papers: Microbial Control 3**  
**Moderators: Roy Bateman and Ping Cheng**
- 14:00 Design and evaluation of the 'MycroHarvester' for separation of powdery fungal conidia from substrates. **Roy Bateman, Sylvia Mermelstein, Belinda Luke, Emma Thompson and Adrian Arnold.** IPARC, Imperial College London, Silwood Park Campus, Ascot, Berks, SL5 7PY, UK
- 14:15 The effect of water quantity, added during mass production, on *Beauveria bassiana* conidia yield and pathogenicity against *Oryzaephilus surinamensis*. **Belinda Luke<sup>1</sup> and Maureen Wakefield<sup>2</sup>.** <sup>1</sup> CABI, Silwood Park, Buckhurst Road, Ascot, Berkshire, SL5 7TA UK; <sup>2</sup>Central Science Laboratory, Sand Hutton, York, UK YO41 1LZ
- 14:30 Development of a mycoinsecticide for the control of *Helicoverpa armigera* infestation on pulses: Significance of back-up strains in the commercial production. **S. Chavan<sup>1</sup>, V. Ghormade<sup>1</sup>, G. Kulkarni<sup>2</sup>, A. Gondhalekar<sup>1</sup>, A. Rajendran<sup>1</sup>, M. Taranekar<sup>1</sup>, S. Kulkarni<sup>1</sup>, Y. Shauche<sup>2</sup> and M.V. Deshpande<sup>1</sup>.** <sup>1</sup>Biochemical Sciences Division, National Chemical Laboratory, Pune -411008, India; <sup>2</sup>Molecular Biology Unit, National Centre for Cell Science, Pune-411007, India
- 14:45 Comparison of two different methods for quality of spray deposits after application of fungal formulations. **Vladimir V. Gouli, Svetlana Y. Gouli, Carolina Provost, Bruce L. Parker and Margaret Skinner.**

Entomological Research Laboratory, University of Vermont, 661 Spear Street, Burlingtonm Vermont 05405-0105, USA

Invertebrate Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan 430071, People's Republic of China

- 15:00 A phenologically based programme for season-long control of false codling moth on citrus, with particular use of a granulovirus and entomopathogenic nematodes. **Sean Douglas Moore<sup>1,2</sup>, Antoinette P Malan<sup>3</sup> and Wayne Kirkman<sup>2</sup>**. <sup>1</sup>River Bioscience, PO Box 20388, Humewood 6013, Port Elizabeth, South Africa; <sup>2</sup>Citrus Research International, PO Box 20285, Humewood 6013, Port Elizabeth, South Africa; <sup>3</sup>University of Stellenbosch, P/Bag X1, Matieland 7602, Stellenbosch, South Africa
- 15:15 Preparation of scFv and monoclonal antibody against HrpA. **Shi Hua Wang and Zong Hua Wang**. Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, China, College of Life Science, Fujian Agriculture and Forestry University, Fuzhou, Fujian 350002
- 14:00-16:00 Thursday Multifunctional Hall**  
**Contributed Papers: Viruses 6**  
**Moderators: Rollie Clem and Monique M. Van Oers**
- 14:00 Characterization of early events during infection of TN368 cells with AcMNPV lacking *p35*. **Bart Bryant and Rollie J. Clem**. Molecular, Cellular, and Developmental Biology Program, Division of Biology, Kansas State University, Manhattan, KS 66506 USA
- 14:15 Activation pathways and signal-mediated upregulation of the insect *Spodoptera frugiperda* caspase-1. **Qingzhen Liu<sup>1, 2</sup> and Nor Chejanovsky<sup>1</sup>**. <sup>1</sup>Entomology Department, Institute of Plant Protection, Agricultural Research Organization, The Volcani Center, POB 6, Bet Dagan, 50250 Israel; <sup>2</sup>State Key laboratory of Virology and Modern Virology Research Center, College of Life Sciences, Wuhan University, Wuhan 430072, P.R. China
- 14:30 Functional analysis of *Helicoverpa armigera* single nucleopolyhedrovirus inhibitor of apoptosis genes. **Marcel Westenberg<sup>1</sup>, Job De Lange<sup>1</sup>, Fei Deng<sup>2</sup>, Hualin Wang<sup>2</sup>, Zhihong Hu<sup>2</sup> and Just M. Vlask<sup>1</sup>**. <sup>1</sup>Laboratory of Virology, Wageningen University, Binnenhaven 11, 6709 PD Wageningen, The Netherlands, marcel.westenberg@wur.nl; <sup>2</sup>State Key Laboratory of Virology, Key Laboratory of Molecular Virology and Joint Laboratory of
- 14:45 Indirect and direct evidence for the role of trypsin in baculovirus infection. **Jeffrey M Slack<sup>1</sup>, Susan D Lawrence<sup>2</sup>, Peter J Krell<sup>3</sup> and Basil M Arif<sup>1</sup>**. <sup>1</sup>Great Lakes Forestry Centre, Natural Resources Canada, Sault Sainte Marie, Ontario, P6A 2E5, Canada; <sup>2</sup>Insect Biocontrol Laboratory, US Department of Agriculture, Beltsville, Maryland, 20852-2350, USA; <sup>3</sup>Department of Molecular and Cellular Biology, University of Guelph, Guelph, Ontario, N1G 2W1, Canada..
- 15:00 The 5' nontranslated region of *Varroa destructor virus 1 (Iflavivirus)*: Structure prediction and IRES activity in insect cells. **Juliette R. Ongus<sup>1</sup>, Els C. Roode<sup>1</sup>, Cornelis W.A. Pleij<sup>2</sup>, Just M. Vlask<sup>1</sup> and Monique M. Van Oers<sup>1</sup>**. <sup>1</sup>Laboratory of Virology, Wageningen University, Binnenhaven 11, 6709 PD Wageningen, The Netherlands; <sup>2</sup>Leiden Institute of Chemistry, Leiden University, Einsteinweg 55, 2333 CC Leiden, The Netherlands
- 15:15 siRNA injection induce sequence-independent protection in *Panaeus monodon* against White Spot Syndrome Virus. **Marcel Westenberg, Bas Heinhuis<sup>1</sup> and Just M. Vlask**. Laboratory of Virology, Wageningen University, Binnenhaven 11, 6709 PD Wageningen, The Netherlands, marcel.westenberg@wur.nl
- 15:30 The *Aedes albopictus* Inhibitor of Apoptosis protects vertebrate cells from Bluetongue virus-induced apoptosis. **Qianjun Li**. Department of Medicine, University of Alabama at Birmingham, BBRB 559, 1530 3RD AVE S, Birmingham, AL 35294, USA
- 16:00-16:30 **Coffee Break**
- 16:30-18:30 Thursday Meeting Center**  
**Contributed Papers: Bacteria 4**  
**Moderator: Brian Federici**
- 16:30 Diversity of toxin gene from *Bacillus thuringiensis* against scarab larvae. **Shu-liang Feng<sup>1</sup>, Da-fang Huang<sup>2</sup>, Rong-yan Wang<sup>1</sup>, Jin-yao Wang<sup>1</sup>, Wei-ping Cao<sup>1</sup>, Li-xin Du<sup>1</sup>, Jian Song<sup>1</sup>, Rui-hua Wu<sup>1</sup>, Fu-ping Song<sup>2</sup> and Jie Zhang<sup>2</sup>**. <sup>1</sup>Feng Shu-liang, Institute of Plant Protection, Hebei Academy of Agricultural and Forestry Sciences, Baoding 071000, China; <sup>2</sup>Song Fu-ping, State key laboratory for biology

of plant diseases and insect pests. Institute of Plant Protection, China Academy of Agricultural Sciences, Beijing 100094, China

92521, USA; <sup>3</sup>Interdepartmental Graduate Programs in Genetics and Molecular Biology, University of California, Riverside, Riverside, California 92521, USA

- 16:45 A novel insecticidal factor from *Bacillus sphaericus* with no mosquitocidal activity. **Hisashi Nishiwaki, Kenta Nakashima, Tadayuki Kawamura and Kazuhiko Matsuda.** Department of Applied Biological Chemistry, School of Agriculture, Kinki University, 3327-204 Nakamachi, Nara 631-8505, Japan
- 17:00 Molecular studies on Iranian native dipteran active *Bacillus thuringiensis* isolates. **Gholamreza Salehi Jouzani.** Agricultural Biotechnology Research Institute of Iran (ABRII), Microorganisms and Biosafety Department, Agricultural Biotechnology Research Institute of Iran (ABRII), Mahdasht road, P.O. Box 21525-1897, Karaj, Iran
- 17:15 Studying of natural strains of *Bacillus cereus-B.thuringiensis* from Siberia and Far East. **Galina Kalmykova<sup>1</sup>, Ljudmila Burtseva<sup>1</sup>, Ivan Dybovskiy<sup>1</sup>, Victor Glupov<sup>1</sup>, Irina Andreeva<sup>2</sup>, Anna Mokeeva<sup>2</sup>, Svetlana Oreshkova<sup>2</sup> and Vladimir Repin<sup>2</sup>.** <sup>1</sup>Institute of Animal Systematics and Ecology Siberian Branch Russian Academy of Sciences, Frunze str. 11, Novosibirsk, 630091 Russia; <sup>2</sup>State Research Center of Virology and Biotechnology "Vector", Kol'tsovo, Novosibirsk region, 630559 Russia
- 17:30 Symbiosis in mosquitoes and its potential application in vector control. **Akinkurolere Rotimi Oluwafemi and Hongyu Zhang.** Institute of Urban Pest, College of Plant Science and Technology, Huazhong Agricultural University, Wuhan 430070. P.R.China
- 17:45 Susceptibility of Legume Pod Borer (LPB), *Maruca vitrata* to the  $\delta$ -endotoxins of *Bacillus thuringiensis* (Bt). **Srinivasan Ramasamy.** AVRDC-The World Vegetable Center, 60 Yi Ming Liao, Shanhu, Tainan 74151, Taiwan
- 18:00 A 1.1 kb fragment downstream from the *bin* operon in *Bacillus sphaericus* 2362 affects Bin yield and crystal size. **Hyun-Woo Park<sup>1</sup>, Yuko Sakano<sup>2</sup> and Brian A Federici<sup>2,3</sup>.** <sup>1</sup>John A. Mulrennan, Sr., Public Health Entomology Research & Education Center, CESTA, Florida A & M University, Panama City, Florida 32405, USA; <sup>2</sup>Department of Entomology, University of California, Riverside, Riverside, California