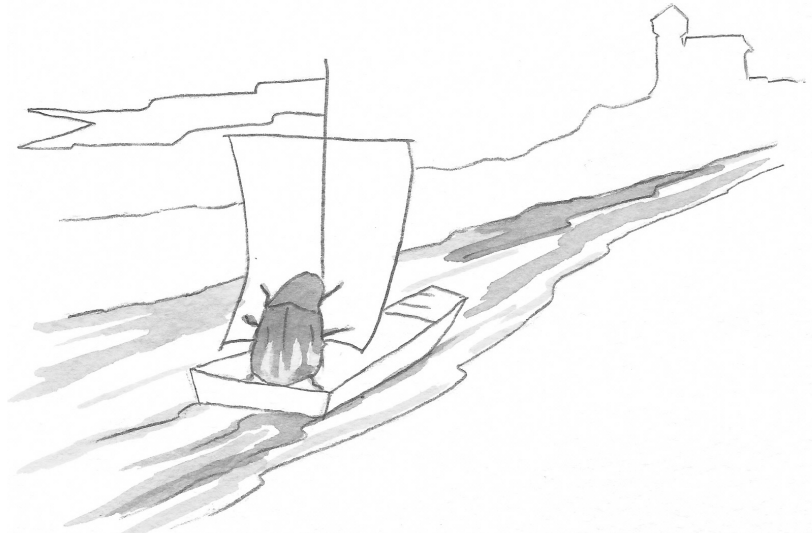


# SIP 2016

## FULL PROGRAM



### Important Notes

Attendants shall not take pictures from projections during presentations

The abstract included in this book should not be cited in print without the author's permission

STU indicates STUDENT presentation

000 indicates the number of ORAL presentation

BA – 00 indicates abstract number for POSTER presentation

## SUNDAY – 24 July

09:00-17:00 **SIP Council Meeting** *Montlouis*  
08:00-17:30 Registration *Hall*

BACTERIA WORKSHOP 14:00-17:00 - *Chinon*  
**The future of the Bt nomenclature**  
*Niel Crickmore & Colin Berry*

18:00-21:30 **Mixer** *Hotel de Ville*

## MONDAY – 25 July

07:30-08:30 **Qi Gong** *Foyer*  
08:00-17:00 **Registration** *Hall*

08.30-10:00 - *Descartes*  
**Opening Ceremony and SIP Founders' Lecture**

08:30 **Opening Ceremony** *Descartes*  
**Welcome Address**  
Elisabeth Herniou, Chair, Organising Committee  
Peter Krell, President of the SIP  
**Award Presentations**  
Monique van Oers, Chair, Awards & Student Committee  
**Founders' Memorial Lecture**  
James Becnel, Chair, Founders' Lecture Committee  
*Honoree:* David Ellar  
*Lecturer:* Nell Crickmore

10:00-10:30 **COFFEE BREAK** *Agnès Sorel*

PLENARY SYMPOSIUM 10:30-12:30 - *Descartes*  
**Insects for Food and Feed**  
*Christina Nielsen Leroux*

10:30 **1 Opportunities and Constraints of farming Insects for food and feed: a global review** - Paul Vantomme, UN Food and Agriculture Organization (FAO), Rome, Italy  
11:00 **2 Industrialization of Insect Farming: New challenges to prevent pathogenic hazards** - Thomas Lefebvre, YNSECT, Genopole, Evry, France  
11:30 **3 Managing insect viruses in insect factories for food and feed: Successful management of an insect virus, *Glossina pallidipes* salivary gland hypertrophy virus, from an insect factory** - Adly Abdalla, Insect Pest Control Laboratory, Joint FAO/IAEA Programme of Nuclear Techniques in Food and Agriculture, IAEA, Vienna, Austria  
12:00 **4 Pathogenic aspects in insects produced for feed and food** - Jørgen Eilenberg, Department of Plant and Environmental Sciences, University of Copenhagen, Denmark

12:30-14:00 **BUFFET LUNCH** *Agnès Sorel*

12:30-14:00 JIP Editorial Board Meeting *Montlouis*

JUNIOR RESEARCHER WORKSHOP 12:30-14:00 - *Chinon*  
**Postdoctoral funding opportunities in the EU & US**

**Postdoctoral funding opportunities in the EU**  
Allyre Lohier, DR8, CNRS, Orléans, France  
**Postdoctoral funding opportunities in the US**  
Rollie Clem, BIO/IOS, NSF, Arlington, United States

SYMPOSIUM DISEASES OF BENEFICIAL INVERTEBRATES 14:00-16:00 - *Courtelaine*

**Mollusc diseases**  
*Grant Stentiford*

14:00 **5 New perspective on the microcell parasites** - Isabelle Arzul, IFREMER, Station de La Tremblade, France  
14:30 **6 A new phylogeny and eDNA insight into paramyxids: an increasingly important but enigmatic clade of protistan parasites of marine invertebrates** - Georgia Ward<sup>1</sup>, Martyn Bennett<sup>2,3</sup>, Kelly Bateman<sup>2</sup>, Grant Stentiford<sup>2</sup>, Rose Kerr<sup>2</sup>, Stephen Feist<sup>2</sup>, Suzanne Williams<sup>1</sup>, Cedric Berney<sup>1</sup>, David Bass<sup>1,2</sup>; <sup>1</sup>Natural History Museum, London, United Kingdom; <sup>2</sup>CEFAS, Weymouth, United Kingdom; <sup>3</sup>School of Biosciences, Univ. of Exeter, United Kingdom

15:00 **7 Viral diseases affecting marine bivalves** - Tristan Renault, IFREMER Nantes, Université de Nantes, France  
15:30 **8 Breeding for disease resistance: Development of a *Crassostrea gigas* SNP array** - Tim Bean<sup>1</sup>, Alejandro Gutierrez<sup>2,3</sup>, Richard Paley<sup>1</sup>, Chantelle Hooper<sup>1</sup>, Matthew Sanders<sup>1</sup>, Craig Stenton<sup>1</sup>, Karim Gharbi<sup>3</sup>, Ross Houston<sup>2,3</sup>, <sup>1</sup>Centre for Environment, Fisheries and Aquaculture Science, Weymouth, United Kingdom; <sup>2</sup>The Roslin Institute and (R/D)SVS University of Edinburgh, United Kingdom; <sup>3</sup>Edinburgh Genomics, University of Edinburgh, United Kingdom

EU COST Action FA1405 SESSION 14:00-16:00 - *Descartes*

**Ménage à trois:**  
**Three way interactions between plants, arthropods and microbes that benefit the plants**  
*Richard Meadow & Maria Pozo*

14:00 **9 A fungal endophyte helps plants to tolerate root herbivory through changes in gibberellin and jasmonate signalling** - Marco Cosme<sup>1</sup>, Jing Lu<sup>2</sup>, Matthias Erb<sup>3</sup>, Michael Stout<sup>4</sup>, Philipp Franken<sup>5</sup>, Susanne Wurst<sup>6</sup>, <sup>1</sup>Plant-Microbe Interactions, Department of Biology, Utrecht University, Utrecht, Netherlands; <sup>2</sup>Institute of Insect Science, Zhejiang University, Hangzhou, China; <sup>3</sup>Institute of Plant Sciences, University of Bern, Switzerland; <sup>4</sup>Department of Entomology, Louisiana State University Agricultural Center, Baton Rouge, United States; <sup>5</sup>Department of Plant Propagation, Leibniz Institute of Vegetable and Ornamental Crops, Erfurt-Kuehnhausen, Germany; <sup>6</sup>Functional Biodiversity, Dahlem Center of Plant Sciences, Institute of Biology, Freie Universität Berlin, Germany  
14:15 **10 Uncovering the effects of cover crops and soil characteristics on *Metarhizium*-plant-insect interactions in an organic cropping system** - Puneet Randhawa<sup>1</sup>, Imtiaz Ahmad<sup>2</sup>, Dawn Luthe<sup>1</sup>, Mary Barbercheck<sup>1</sup>, <sup>1</sup>Pennsylvania State University, United States; <sup>2</sup>Quaid-i-Azam University, Islamabad, Pakistan  
14:30 **11-STU Induced plant defense accomplished by a grass endophyte** - Benjamin Fuchs, Jochen Krauss, Department of Animal Ecology and Tropical Biology, Biocenter, University of Würzburg, Germany  
14:45 **12 Systemic grass endophytes and their importance for herbivores in Europe** - Jochen Krauss, Department of Animal Ecology and Tropical Biology, Biocenter, University of Würzburg, Germany  
15:00 **13 Plant metabolic responses to endophytic colonization by *Trichoderma* and *Epichloe* and their effect on insects** - Michael Rostas, Daniel Maag, Diwakar Kandula, Mike Cripps, Caroline Mueller, Patrick Silcock, Bio-Protection Research Centre, Lincoln University, New Zealand  
15:15 **14 Endophytic entomopathogenic *Metarhizium brunneum* against insect pests: novel integrated fermentation and formulation strategies** - Anant Patel<sup>1</sup>, Stefan Vidal<sup>2</sup>, Laurenz Hettlage<sup>1</sup>, Desiree Jakobs-Schoenwandt<sup>1</sup>, Vivien Krell<sup>1</sup>; <sup>1</sup>Bielefeld University of Applied Sciences, Department of Engineering Sciences and Mathematics, Bielefeld, Germany; <sup>2</sup>Göttingen Department of Crop Sciences, University of Göttingen, Göttingen, Germany  
15:30 **15 Determination of destruxin A in potato plants after foliar spray of *Metarhizium brunneum*** - Alex Rios-Moreno, Inmaculada Garrido-Jurado, Gloria Resquin-Romero, Lourdes Arce, Enrique Quesada Moraga, University of Córdoba, Spain

CONTRIBUTED PAPERS 14:00-16:00 - *Vouvray*

### Virus 1

*David Theilmann & Kai Yang*

14:00 **16-STU Protein tyrosine phosphatase 2 from the baculovirus *SeMNVP* induces apoptosis in insect cells** - Yue Han, Stineke Van Houte, Susan Van Aalst, Monique Van Oers, Vera Ros, Laboratory of Virology, Wageningen University, Netherlands  
14:15 **17-ST Characterization of *AcMNPV* encoded viral ubiquitin and its association with *AC141* for the production of budded virus** - Siddhartha Biswas<sup>1</sup>, Leslie Willis<sup>2</sup>, David Theilmann<sup>1,2</sup>; <sup>1</sup>University of British Columbia, Vancouver, Canada; <sup>2</sup>Summerland Research and Development Centre, Summerland, British Columbia, Canada  
14:30 **18-STU 3-Dimensional ultrastructural modelling of *Autographa californica* multicapsid nucleopolyhedrovirus infection in insect cells to determine the role of P10 during**

- baculovirus infection** - [Leo Graves](#)<sup>1</sup>, Louise Hughes<sup>1</sup>, Sarah Irons<sup>1</sup>, Linda King<sup>1</sup>, Possee Robert<sup>1,2</sup>, <sup>1</sup>Oxford Brookes University, Headington Campus, Oxford, United Kingdom; <sup>2</sup>Oxford expression technologies, United Kingdom
- 14:45 **19** **The Autographa californica multiple nucleopolyhedrovirus ac54 gene is crucial for the localization of the major capsid protein VP39 at the site of nucleocapsid assembly** - Zhanwen Guan, Ling Zhong, Chunyan Li, Wenbi Wu, Meijin Yuan, [Kai Yang](#), State Key Laboratory of Biocontrol, Sun Yat-sen University, Guangzhou, China
- 15:00 **20** **Structural and functional analyses of the sulfhydryl oxidase P33 of Autographa californica multiple nucleopolyhedrovirus** - Kuang Wenhua, Hou Dianhai, Zhang Huanyu, Wang Manli, Zhou Ningyi, Deng Fei, Wang Hualin, Gong Peng, [Zhihong Hu](#); State Key laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, China
- 15:15 **21** **Functional analysis of the conserved cysteines of AcMNPV GP41** - Li Yimeng, Wang Manli, Shen Shu, Hu Liangbo, Hu Zhihong, [Deng Fei](#), Wang Hualin; State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, China
- 15:30 **22** **Autographa californica multiple nucleopolyhedrovirus (AcMNPV) PIF protein AC83 is required for nucleocapsid assembly for both ODV and BV as well as recruitment of the PIF complex to the ODV envelopes** - Muhammad Javed<sup>1</sup>, Leslie Willis<sup>2</sup>, Stephanie Harris<sup>1</sup>, Martin Erlandson<sup>1</sup>, B. Cam Donly<sup>3</sup>, Dwayne Hegedus<sup>1</sup>, Monique Van Oers<sup>4</sup>, [David Theilmann](#)<sup>2</sup>; <sup>1</sup>Saskatoon Research and Development Centre, Agriculture and Agri-Food Canada, Saskatoon, Canada; <sup>2</sup>Summerland Research and Development Centre Agriculture and Agri-Food Canada, Summerland, Canada; <sup>3</sup>London Research and Development Centre Agriculture and Agri-Food Canada, London, Canada; <sup>4</sup>Laboratory of Virology, Wageningen University Wageningen, Netherlands
- 15:45 **23** **The host specificities of baculovirus per os infectivity factors** - Song Jingjiao<sup>1,2</sup>, Wang Xi<sup>1</sup>, Huang Huachao<sup>1</sup>, Deng Fei<sup>1</sup>, Wang Hualin<sup>1</sup>, Arif Basil<sup>3</sup>, Hu Zhihong<sup>1</sup>, [Manli Wang](#)<sup>1</sup>; <sup>1</sup>State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, China; <sup>2</sup>Experimental medicine center, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China; <sup>3</sup>Laboratory for Molecular Virology, Great Lakes Forestry Centre, Sault Ste. Marie, Ontario, Canada

CONTRIBUTED PAPERS

14:00-16:00 - *Chinon*

**Bacteria 1**

*Ken Narva & Peter Kupferschmid*

- 14:00 **24** **Immunomodulatory activity of *Brevibacillus laterosporus* on the house fly** - Maria Elena Mura, [Luca Ruiu](#), Department of Agriculture, University of Sassari – Italy; and Biocepest Srl – Technology Park of Sardinia, Tramariglio, Italy
- 14:15 **25** **Immune and detoxification systems of Colorado potato beetle infected with bacteria *Bacillus thuringiensis*** - [Olga Polenogova](#), Ekaterina Grizanova, Olga Yaroslavtseva, Viktor Khodyrev, Ivan Dubovskiy; Institute of Systematics and Ecology of Animals, Siberian Branch of Russian Academy of Science, Russia
- 14:30 **26 -STU** **Immune priming might have evolved from infection by Gram+ bacterial pathogens in the mealworm beetle, *Tenebrio molitor*** - [Julien Dhinaut](#), Manon Chogne, Yannick Moret; Biogéosciences, Université de Bourgogne, CNRS UMR6282 Dijon, France
- 14:45 **27-STU** **Identification of synergist interactions between midgut bacteria of *Lymantria dispar* larvae and *Bacillus thuringiensis* HD-1** - [Zane Metla](#)<sup>1</sup>, [Monika Maurhofer](#)<sup>2</sup>, [Liga Jankevica](#)<sup>1</sup>; <sup>1</sup>Laboratory of Experimental Entomology and Microbiology, Institute of Biology, University of Latvia, Latvia; <sup>2</sup>ETH, Zurich, Switzerland
- 15:00 **28-STU** **Plasmid-borne rap-phr systems control sporulation of *Bacillus thuringiensis* in insect larvae** - [Fernanda Fazio](#)<sup>1,2</sup>, [Stéphane Perchat](#)<sup>1</sup>, [Christophe Buisson](#)<sup>1</sup>, [Gislayne Vilas-Boas](#)<sup>2</sup>, [Didier Lereclus](#)<sup>1</sup>; <sup>1</sup>INRA Micalis Institute, INRA, AgroParisTech, Université Paris-Saclay, Jouy-en-Josas, France; <sup>2</sup>Universidade Estadual de Londrina, Brazil
- 15:15 **29-STU** **A bioassay method to determine the insecticidal activity of *Bacillus thuringiensis* against *Ceratitis capitata* (Diptera: Tephritidae) and *Drosophila suzukii* (Diptera:**

**Drosophilidae)** - [Daniel Valtierra](#)<sup>1,2</sup>, Isabel Matas<sup>1</sup>, Javier Caballero<sup>1,2</sup>, Primitivo Caballero<sup>1,2</sup>; <sup>1</sup>Instituto de Agrobiotecnología, CSIC-UPNA, Spain; <sup>2</sup>Depart. de Producción Agraria, Universidad Pública de Navarra, Pamplona, Spain

- 15:30 **30-STU** **Susceptibility of *Grapholita molesta* (Busck, 1916) to *Bacillus thuringiensis*, individual toxins and their mixtures** - Joaquin Gomis-Cebolla<sup>1</sup>, Ana P. S Ricietto<sup>1,2</sup>, Gislayne T Vilas-Bôas<sup>2</sup>, Juan Ferré<sup>1</sup>; <sup>1</sup>University of València, ERI of Biotechnology and Biomedicine, Departamento de Genética, Facultad de Ciencias Biológicas, Burjassot, Spain; <sup>2</sup>Centro de Ciências Biológicas Universidade Estadual de Londrina, Brazil
- 15:45 **31-STU** **Interactions between HepG2 and Parasporin-3** - Wided Souiss, Samuel Colosimo, Tweedie Alistair, Michelle West, Neil Crickmore; Department of Biochemistry, School of Life Sciences University of Sussex, Falmer, Brighton, United Kingdom

16:00-16:30 **COFFEE BREAK**

*Agnès Sorel*

SYMPOSIUM OF THE FUNGI DIVISION

16:30-18:30 - *Descartes*

**How Fungi mediate protection against herbivores and plant pathogens**

*Nicolai Vitt Meyling & Maya Raad*

- 16:30 **32** **Plant protection potential of entomopathogenic fungi as endophytes: What is the evidence and what is the mechanism?** - [Nicolai Meyling](#)<sup>1</sup>, Aimee Mckinnon<sup>2</sup>, Maya Raad<sup>2</sup>, Maria Moran-Diez<sup>2</sup>, Travis Glare<sup>2</sup>, Susanna Saari<sup>1</sup>; <sup>1</sup>Department of Plant and Environmental Sciences, University of Copenhagen, Denmark; <sup>2</sup>Bio-Protection Research Centre, Lincoln University, New Zealand
- 16:45 **33** **Microbial-induced resistance against herbivores: mechanisms and ecological consequences** - [Ana Pineda](#); Netherlands Institute of Ecology, NIOO-KNAW, Netherlands
- 17:10 **34** **Priming of plant defenses against herbivores by arbuscular mycorrhizal fungi** - [Maria J. Pozo](#)<sup>1</sup>, [Javier Rivero](#)<sup>1</sup>, [Javier Lidoy](#)<sup>1</sup>, [Victor Flors](#)<sup>2</sup>; <sup>1</sup>Estacion Experimental del Zaidin, CSIC, Granada, Spain; <sup>2</sup>Universitat Jaume, Castello de la Plana, Spain
- 17:35 **35** **Induced systemic resistance by *Trichoderma spp*** - [Christine Vos](#)<sup>1,2,3</sup>, [Katrijn Raymaekers](#)<sup>1,2</sup>, [Yuxia Yang](#)<sup>1</sup>, [Kaat De Cremer](#)<sup>1,2</sup>, [Barbara De Coninck](#)<sup>1,2</sup>, [Kemal Kazan](#)<sup>3</sup>, [Bruno Cammue](#)<sup>1,2</sup>; <sup>1</sup>KU Leuven Centre of Microbial and Plant Genetics, Leuven, Belgium; <sup>2</sup>VIB Department of Plant Systems Biology, Ghent, Belgium; <sup>3</sup>CSIRO Agriculture, St Lucia, Queensland, Australia
- 18:00 **36** **Elucidating the mechanisms of *Beauveria bassiana* induced plant resistance** - [Maya Raad](#), Travis Glare, Michael Rostás; Bio-Protection Research Centre, Lincoln University, Lincoln, New Zealand

CONTRIBUTED PAPERS

16:30-18:30 - *Courteline*

**Diseases of Beneficial Invertebrates 1**

*David Bass*

- 16:30 **37-STU** **Flat oyster follows the apoptosis pathway to defend against the protozoan parasite *Bonamia ostreae*** - [Ophélie Gervais](#)<sup>1</sup>, [Chollet Bruno](#)<sup>1</sup>, [Tristan Renault](#)<sup>2</sup>, [Isabelle Arzuil](#)<sup>1</sup>; <sup>1</sup>Laboratoire de Génétique et Pathologie des Mollusques Marins, IFREMER, La Tremblade, France; <sup>2</sup>Département Ressources Biologiques et Environnement, IFREMER, Nantes, France
- 16:45 **38** **Influence of temperature on the haplosporidian parasite *Bonamia ostreae* exposed to *Crassostrea gigas* and *Ostrea edulis* oyster mucus** - [Sergio Fernandez-Boo](#), [Ophélie Gervais](#), [Bruno Chollet](#), [Isabelle Arzuil](#); Laboratoire de Génétique et Pathologie des Mollusques Marins, IFREMER, La Tremblade, France
- 17:00 **39** **Monitoring of the autophagy pathway in *C. gigas* during an experimental OsHV-1 infection at cellular molecular and proteomic levels** - [Sandy Picot](#)<sup>1</sup>, [Benjamin Morga](#)<sup>1</sup>, [Nicole Faury](#)<sup>1</sup>, [Isabelle Arzuil](#)<sup>1</sup>, [Tristan Renault](#)<sup>2</sup>; <sup>1</sup>Laboratoire de Génétique et Pathologie des Mollusques Marins, IFREMER, La Tremblade, France; <sup>2</sup>Département Ressources Biologiques et Environnement, IFREMER, Nantes, France
- 17:15 **40** **Genome sequencing of the Ostreid herpesvirus 1 infecting oysters in Tomales Bay, California** - [Colleen Burge](#), Stanley Langevin, Collin Closek, Natalie Rivlin, Carolyn Friedman; Institute of Marine and Environmental Technology, University of Marine Baltimore County, United States
- 17:30 **41** **Reducing the impact of pathogens and disease in the Irish Pacific oyster *Crassostrea gigas* by understanding**

**Environment: Host/Pathogen interaction** - Babette Bookelaar, Sharon Lynch, Sarah Culloty; University College Cork, Ireland

- 17:45 **42 Apicomplexans infecting marine molluscs** - Mark Freeman<sup>1</sup>, Arni Kristmundsson<sup>2</sup>. <sup>1</sup>Ross University School of Veterinary Medicine, Saint Kitts and Nevis; <sup>2</sup>Institute for Experimental Pathology at Keldur, University of Iceland, Iceland
- 18:00 **43 Is an apicomplexan responsible for the collapse in the Iceland scallop stock in Iceland?** - Arni Kristmundsson<sup>1</sup>, Asthildur Erlingsdottir<sup>1</sup>, Mark Freeman<sup>2</sup>; <sup>1</sup>Institute for Experimental Pathology at Keldur, University of Iceland, Reykjavik, Iceland; <sup>2</sup>Ross University School of Veterinary Medicine, Saint Kitts and Nevis

CONTRIBUTED PAPERS

16:30-18:30 - Vouvray

## Virus 2

Robert Harrison & Bergmann Ribeiro

- 16:30 **44-STU Genome stability of AgseNPV-B after serial in vitro passage** - Gianpiero Gueli Alletti, Eric Carstens, Johannes Jehle; Julius Kühn-Institut, Federal Research Centre for Cultivated Plants, Institute for Biological Control, Darmstadt, Germany
- 16:45 **45-STU Synthetic baculovirus genomes to extend host range** - Yu Shang<sup>1</sup>, Fei Deng<sup>1</sup>, Geng Xiao<sup>1</sup>, Man Wang<sup>1</sup>, Dian Hou<sup>1</sup>, Kai Pan<sup>1</sup>, Basil Arif<sup>2</sup>, Hua Wang<sup>1</sup>, Zhi Hu<sup>1</sup>; <sup>1</sup>State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, China; <sup>2</sup>Great Lakes Forestry Centre, Sault Ste. Marie, Canada
- 17:00 **46-STU Genotype Detection and Abundance within Baculoviruses using Next Generation Sequencing** - Christopher Noune, Caroline Hauxwell; Queensland University of Technology, Brisbane, Australia
- 17:15 **47 The complete genome sequence of Plodia interpunctella granulovirus: discovery of an unusual inhibitor of apoptosis (IAP) gene** - Robert L. Harrison<sup>1</sup>, Daniel L. Rowley<sup>1</sup>, C. Joel Funk<sup>2</sup>; <sup>1</sup>Invasive Insect Biocontrol and Behavior Laboratory, USDA-ARS Beltsville, Maryland, United States; <sup>2</sup>Department of Biology, John Brown University, Siloam Springs, Arkansas, United States
- 17:30 **48-STU Study of the domestication of a viral genome in the parasitoid wasp *Venturia canescens*** - Matthieu Leobold<sup>1</sup>, Annie Bézier<sup>1</sup>, Anne-Nathalie Volkoff<sup>2</sup>, Jean-Michel Drezen<sup>1</sup>; <sup>1</sup>Institut de recherche sur la biologie de l'insecte, CNRS UMR7261, Université François Rabelais, Tours, France; <sup>2</sup>Diversité, Génomes Interactions Microorganismes - Insectes, INRA UMR1333, Université Montpellier 2, France
- 17:45 **49-STU Adaptation genomics in the bracovirus of *Cotesia sesamiae*** - Jeremy Gauthier<sup>1</sup>, Philippe Gayral<sup>1</sup>, Bruno Le Ru<sup>2</sup>, Stéphane Dupas<sup>3</sup>, Severine Jancek<sup>1</sup>, Gabor Gyapay<sup>4</sup>, Laure Kaiser<sup>3</sup>, Elisabeth Herniou<sup>1</sup>; <sup>1</sup>Institut de recherche sur la biologie de l'insecte - CNRS UMR7261, Université François Rabelais, Tours, France; <sup>2</sup>International Centre of Insect Physiology and Ecology (ICIPE), Nairobi, Kenya; <sup>3</sup>Evolution Génomes Comportement Ecologie CNRS UMR9191 Gif-sur-Yvette, France; <sup>4</sup>Centre National de Séquençage Institut de génomique Direction des Sciences du vivant CEA, Evry, France
- 18:00 **50 Expansion of the family *Nimaviridae*** - Kelly S. Bateman<sup>1</sup>, Ronny Van Aerle<sup>1</sup>, Rose Kerr<sup>1</sup>, Jamie Bojko<sup>1</sup>, K. Fraser Clark<sup>2,3</sup>, Sarah E. Stewart-Clark<sup>3</sup>, Philip Byrne<sup>4</sup>, Spencer J. Greenwood<sup>2</sup>, David Bass<sup>1</sup>, Grant D. Stentiford<sup>1</sup>; <sup>1</sup>European Union Reference Laboratory for Crustacean Diseases, Centre for Environment, Fisheries and Aquaculture Science (Cefas), Weymouth, United Kingdom; <sup>2</sup>Dept. of Biomedical Sciences and AVC Lobster Science Centre, Atlantic Veterinary College, University of Prince Edward Island, Charlottetown, Canada; <sup>3</sup>Department of Plant and Animal Sciences, Agricultural Campus, Dalhousie University, Truro, Canada; <sup>4</sup>Department of Fisheries and Oceans Canada, Charlottetown, Canada
- 18:00 **51 Characterization and complete genome sequence of a new cytovirus isolated from *Thyrineina arnobi* (Stoll, 1782) (Lepidoptera: *Geometridae*)** - André Horta<sup>1</sup>, Daniel Ardisson-Araújo<sup>2</sup>, Fabricio Morgado<sup>2</sup>, Leonardo Silva<sup>2</sup>, Fernando Melo<sup>2</sup>, Manoel Victor Lemos<sup>3</sup>, Zulene Ribeiro<sup>3</sup>, Arlindo Junior<sup>3</sup>, Carlos Wilcken, Bergmann Ribeiro<sup>2</sup>; <sup>1</sup>Universidade Estadual Paulista "Júlio de Mesquita Filho", Faculdade de Ciências Agrônômicas Botucatu, Brazil; <sup>2</sup>Universidade de Brasília, Instituto de Biologia, Departamento de Biologia Celular, Brasília, Brazil; <sup>3</sup>Universidade Estadual Paulista "Júlio de Mesquita Filho", Faculdade de Ciências Agrárias e Veterinárias, Jaboticabal,

Brazil

CONTRIBUTED PAPERS

16:30-18:30 - Chinon

## Microbial Control 1

Travis Glare

- 16:30 **52 Investigations on spore residues of the product Xentari® (*Bacillus thuringiensis subsp. aizawai*) and their persistence on sweet pepper and tomato** - Dietrich Stephan, Alexandra Wagner; Institute for Biological Control, Julius Kühn-Institut (JKI) Darmstadt, Germany
- 16:45 **53 Encapsulation and UV Photoprotection of a Vip3 toxin** - Inigo Ruiz De Escudero<sup>1,2</sup>, Leopoldo Palma<sup>3</sup>, Francisco Mañeru<sup>1</sup>, Primitivo Caballero<sup>1</sup>; <sup>1</sup>Instituto de Agrobiotecnología, CSIC-UPNA, Gobierno de Navarra, Spain; <sup>2</sup>Universidad Pública de Navarra. Laboratorio de Entomología Agrícola y Patología de Insectos, Pamplona, Spain; <sup>3</sup>Facultad de Ciencias Agrarias, Universidad Nacional del Litoral, Santa Fe, Argentina
- 17:00 **54-STU Genetic and biological characterization of *Bacillus thuringiensis* isolates showing insecticidal activity against *Leptinotarsa decemlineata* (Coleoptera: *Chrysomelidae*)** - Mikel Dominguez<sup>1,2</sup>, Jesus Murillo<sup>1</sup>, Primitivo Caballero<sup>1,2</sup>; <sup>1</sup>Departamento de Produccion Agraria, Universidad Publica de Navarra (UPNA) Pamplona, Navarra, Spain; <sup>2</sup>Instituto de Agrobiotecnología CSIC-Gobierno de Navarra, Navarra, Spain
- 17:15 **55-STU Analysis of the occurrence of cry, vip3 and chitinases genes in *Bacillus thuringiensis* strains isolated from Algeria** - Zahia Djenane<sup>1,2,3</sup>, Joaquín Gomis-Cebolla<sup>2</sup>, Fairouz Elaïchar<sup>1</sup>, Hassiba Khorf Khorf<sup>1</sup>, Ahmed Abderrahmani<sup>1</sup>, Farida Nateche<sup>1</sup>, Juan Ferré<sup>2</sup>; <sup>1</sup>Laboratory of Cellular and Molecular Biology, team of microbiology, Algiers, Algeria; <sup>2</sup>ERI de Biotecnología y Biomedicina, Universitat de València, Burjassot, Spain; <sup>3</sup>University of Science and Technology, Algiers, Algeria
- 17:30 **56-STU Increase toxicity from a modified Cry3Aa toxin against *Monochamus alternatus***; Yajie Guo<sup>1</sup>, Yafang Wang<sup>2</sup>, Zhuoying Xu<sup>2</sup>, Yueting Xiong<sup>2</sup>, Yani Mou<sup>2</sup>, Qiannan Lin<sup>1</sup>, Rong Wang<sup>1</sup>, Xia Hu<sup>1</sup>, Guanghong Liang<sup>1</sup>, Xiong Guan<sup>2</sup>, Songqing Wu<sup>1,2</sup>, Feiping Zhang<sup>1</sup>; <sup>1</sup>Collage of Forestry, Fujian Agriculture and Forestry University, Fuzhou, People's Republic of China; <sup>2</sup>Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, Fujian Agriculture and Forestry University, Fuzhou, People's Republic of China
- 17:45 **57-STU Spanish strains of *Bacillus thuringiensis* as biological control agents against *Lobesia botrana* (Lepidoptera: Tortricidae) larvae** - Javier Caballero<sup>1,2</sup>, Isabel Matas<sup>1</sup>, Maite Zarranz<sup>1</sup>, Primitivo Caballero<sup>1,2</sup>; <sup>1</sup>Instituto de Agrobiotecnología CSIC-Gobierno de Navarra (IDAB) Mutilva, Navarra, Spain; <sup>2</sup>Departamento de Produccion Agraria, Universidad Publica de Navarra (UPNA) Pamplona, Navarra, Spain
- 18:00 **58 New Insecticidal Proteins from Non-*Bacillus thuringiensis* Microbial Diversity** - Lu Liu<sup>1</sup>, Jarred Oral<sup>1</sup>, Dan Altier<sup>2</sup>, Jessica O'rear<sup>1</sup>, Barbara Rosen<sup>1</sup>, James Le<sup>1</sup>, Mark Mcdonald<sup>1</sup>, David Cert<sup>1</sup>, Jon Robeson<sup>2</sup>, Lisa Procyk<sup>2</sup>, Adane Kassa<sup>2</sup>, Weiping Xie<sup>1</sup>, Genhai Zhu<sup>1</sup>, Jennifer Barry<sup>2</sup>, Claudia Pérez-Ortega<sup>2</sup>, Nuria Jiménez-Juárez<sup>2</sup>, Miles Cowart<sup>2</sup>, Jian-Zhou Zhao<sup>2</sup>, Ute Schellenberger<sup>1</sup>, Nasser Yalpani<sup>2</sup>, Jun-Zhi Wei<sup>1</sup>, Virginia Crane<sup>2</sup>, Gary Sandahl<sup>2</sup>, Mark Nelson<sup>2</sup>, Albert Lu<sup>2</sup>, Gusui Wu<sup>2</sup>; <sup>1</sup>DuPont Pioneer, Hayward, CA, United States; <sup>2</sup>DuPont Pioneer, Johnston, United States
- 18:15 **59 Managing the evolution of resistance to biopesticides with genetically modified insects** - Raymond Ben; University of Exeter, Penryn campus Cornwall, United Kingdom

18:30-19:45

## Division Business Meetings and Workshops

Bacteria Division Meeting

Vouvray

Fungi Division Meeting

Chinon

Microsporidia Division Meeting

Courteline

'Open discussion on hot topics in microsporidia research'

Y. Sokolova

## TUESDAY – 26 July

07:00-08:00 **Qi Gong** Foyer  
07:30-12:30 **Registration** Hall

SPECIAL SYMPOSIUM 08:00-10:00 - *Vouvray*

### Human impact on pathogens-honeybee interactions

*Aurore Dubuffet & Philippe Gayral*

- 08:00 **60** **EPILOBEE: Results from a pan-European epidemiological study on honeybee colony losses 2012-2014, conducted by the European Union Reference Laboratory** - Marie-Pierre Chauzat, Marion Laurent, Antoine Jacques, Epilobee Consortium, Laura Cauquil, Marie-Pierre Riviere, Mathilde Saussac, Stéphanie Bougeard, Pascal Hendrikx, **Magali Chabert**, Honey Bee Pathology Unit, European Union Reference Laboratory for Honey Bee Health (Anses) French Agency for Food, Environmental and Occupational Health Safety, Sophia Antipolis, France
- 08:30 **61** **Honey bee stressor interactions: never the same, and so much to learn** - **Geoffrey Williams**; University of Bern and Agroscope, Switzerland
- 09:00 **62** **Interactions between the gut parasite *Nosema ceranae* and pesticides in the honeybee** - **Frederic Delbac**<sup>1,2</sup>, Marie Diogon<sup>1,2</sup>, Lauriane Paris<sup>1,2</sup>, Cyril Jousse<sup>1,3</sup>, Anne Mone<sup>1,2</sup>, Catherine Texier<sup>1,2</sup>, Aurore Dubuffet<sup>1,2</sup>, Mounir Traika<sup>1,3</sup>, Marie Lagree<sup>1</sup>, Nicolas Blot<sup>1,2</sup>, Hicham El Alaoui<sup>1,2</sup>, <sup>1</sup>Université Blaise Pascal, Clermont-Ferrand II, France; <sup>2</sup>Microorganismes: Génomes et Environnement, CNRS UMR6023, Université Blaise Pascal, Clermont-Ferrand II, Aubière, France; <sup>3</sup>Institut de Chimie de Clermont-Ferrand, CNRS UMR6296, Université Blaise Pascal, Clermont-Ferrand II, Ecole Nationale Supérieure de Chimie de Clermont-Ferrand, Aubière, France
- 09:30 **63** **On the interconnected emerging parasite pressures facing bees** - **Dino McMahon**, Myrsini Natsopoulou, Matthias Furst, Vincent Doublet, Theodorou Panagiotis, John Bryden, Silvio Weging, Andreas Gogol-Doring, Mark Brown, Robert Paxton; Freie University Berlin, Germany
- 10:00 **64** **Man-made epidemics: Varroa and DWV in honeybees and the risk they pose to wild pollinators** - **Lena Wilfert**<sup>1</sup>, Robyn Manley<sup>1</sup>, Mike Boots<sup>2</sup>; <sup>1</sup>Centre for Ecology and Conservation, University of Exeter, Penryn Campus, United Kingdom; <sup>2</sup>Integrative Biology, UC Berkeley, United States

CROSS DIVISION SYMPOSIUM 08:00-10:00 - *Chinon*

### Recruitment of beneficial microbes and nematodes

*Mike Brownbridge & David Shapiro*

- 08:00 **65** **Entomopathogenic fungi: Friend or enemy of the plant?** - **Rob Van Tol**<sup>1</sup>, Gerrie Wiegers<sup>1</sup>, Marilena Palmisano<sup>2</sup>, Jurg Grunder<sup>2</sup>; <sup>1</sup>Wageningen University and Research Centre, Wageningen, Netherlands; <sup>2</sup>Zurich University of Applied Sciences Waedenswil, Switzerland
- 08:30 **66** **Potential of root-associated pseudomonads with insecticidal activity for biological control of soil-dwelling insect pests of crops** - **Christoph Keel**<sup>1</sup>, Nicola Imperiali<sup>1</sup>, Geoffrey Jaffuel<sup>2</sup>, Pascale Flury<sup>3</sup>, Monika Maurhofer<sup>3</sup>, Ted Turlings<sup>2</sup>; <sup>1</sup>University of Lausanne, Department of Fundamental Microbiology, Lausanne, Switzerland; <sup>2</sup>University of Neuchatel, Fundamental and Applied Research in Chemical Ecology, Neuchatel, Switzerland; <sup>3</sup>Swiss Federal Institute of Technology Zürich, Switzerland
- 09:00 **67** **Threesome in the rhizosphere: bacteria, entomopathogenic nematode, and plant interactions** - Ivan Hiltbold<sup>1</sup>, **Michael Brownbridge**<sup>2</sup>; <sup>1</sup>Western Sydney University, Australia; <sup>2</sup>Vineland Research and Innovation Centre, Canada
- 09:30 **68** **Entomopathogenic Nematodes Boost Plant Immunity** - **Parwinder Grewal**; University of Texas Rio Grande Valley, Edinburg, United States

CONTRIBUTED PAPERS 08:00-10:00 - *Courteline*

### Bacteria 2

*Marianne Carey & Shuyuan Guo*

- 08:00 **69** **Cry1Ac toxin mode of action in heliothines** - Heba Abdelgaffar<sup>1</sup>, Cris Oppert<sup>2</sup>, Jessica Monserrate<sup>2</sup>, **Juan Luis Jurat-Fuentes**<sup>1</sup>; <sup>1</sup>Dept of Entomology and Plant Pathology, University of Tennessee, Knoxville, United States; <sup>2</sup>Bayer CropScience, Morrisville NC, United States
- 08:15 **70** **In-plant protection from the insect pest *Helicoverpa***

**armigera** by trans-kingdom RNAi - **Julia Bally**<sup>1</sup>, Glen McIntyre<sup>2</sup>, Rachel Doran<sup>1</sup>, Ignacio Larrinua<sup>3</sup>, Kenneth Narva<sup>3</sup>, Peter Waterhouse<sup>1,2</sup>; <sup>1</sup>Centre for Tropical Crops and Biocommodities, Brisbane, Australia; <sup>2</sup>University of Sydney, Australia; <sup>3</sup>Dow AgroSciences, United States

- 08:30 **71** ***Lysinibacillus sphaericus* Binary toxin structure revealed in situ by de novo phasing with an X-ray free-electron laser: Insights into the larvicidal biology of BinA and BinB** - Jacques-Philippe Colletier<sup>1</sup>, Michael Sawaya<sup>2</sup>, Jose Rodriguez<sup>2</sup>, Dullio Cascio<sup>2</sup>, Dennis Bideshi<sup>3</sup>, Robert Hice<sup>3</sup>, **Brian Federici**<sup>4</sup>, David Eisenberg<sup>2</sup>; <sup>1</sup>Institut de Biologie Structurale, Université Joseph Fourier, Grenoble I, CNRS UMR5075, CEA, France; <sup>2</sup>UCLA-DOE Institute of Genomics and Proteomics, University of California, Los Angeles, United States; <sup>3</sup>Department of Entomology, University of California, Riverside, United States; <sup>4</sup>Department of Entomology, Institute of Integrative Genome Biology, University of California, Riverside, United States
- 08:45 **72** **A binB knockout in *Lysinibacillus sphaericus* demonstrates BinA can form a crystal without BinB in *Bacillus thuringiensis*** - **Hyun-Woo Park**<sup>1</sup>, Dennis Bideshi<sup>1</sup>, Brian Federici<sup>2</sup>; <sup>1</sup>Department of Entomology, University of California, Riverside, and Department of Biological Sciences, California Baptist University, Riverside, California, United States; <sup>2</sup>Interdepartmental Graduate Programs in Microbiology and Cell, Molecular, and Developmental Biology, University of California, Riverside, United States
- 09:00 **73** **Structure and activity of the Cry6Aa pesticidal toxin** - **Colin Berry**, Alexey Dementiev, Jason Board, Anand Sitaram, Timothy Hey, Matthew Kelker, Xiaoping Xu, Yan Hu, Cristian Vidal-Quist, Vimbai Chikwana, Samantha Griffin, David Mccaskill, Nick Wang, Shao-Ching Hung, Michael Chan, Marianne Lee, Jessica Hughes, Alice Wegener, Raffi Aroian, Kenneth Narva; School of Biosciences, Cardiff, United Kingdom
- 09:15 **74** **The *Bacillus thuringiensis* toxin Cry6Aa1 forms ionic channels in giant liposomes** - **Vincent Vachon**<sup>1</sup>, Maxime Schmidt<sup>1</sup>, Timothy Hey<sup>2</sup>, Xiaoping Xu<sup>2</sup>, Samantha Griffin<sup>2</sup>, Vimbai Chikwana<sup>2</sup>, David Mccaskill<sup>2</sup>, Ken Narva<sup>2</sup>, Jean-Louis Schwartz<sup>1,3</sup>; <sup>1</sup>Groupe d'étude des protéines membranaires, Département de physiologie moléculaire et intégrative, Université de Montréal, Canada; <sup>2</sup>Dow Agrosciences LLC, Indianapolis, United States; <sup>3</sup>Centre SEVE de recherche en sciences du végétal, Université de Sherbrooke, Canada
- 09:30 **75** **STU Two polysaccharides are involved in the formation of specific biofilm structures in *B. thuringiensis*** - **Racha Majed**<sup>1,2</sup>, Mireille Kallassy<sup>2</sup>, Michel Gohar<sup>1</sup>; <sup>1</sup>MICrobiologie de l'Alimentation au Service de la Santé humaine, AgroParisTech, INRA UMR1319, Jouy-en-Josas, France; <sup>2</sup>Laboratoire de Biotechnologie, Université Saint-Joseph, Beyrouth, Lebanon
- 09:45 **76** **Enzymatic activity of *Bacillus thuringiensis* toxins** - **David Pauron**, Marcel Amichot, Marie-Paule Esposito, Armel Gallet; Institut Sophia Agrobiotech, Equipe Bioinsecticides, Environnement et Santé, CNRS UMR7254, Université de Nice Sophia-Antipolis, INRA UMR1355, Sophia Antipolis, France

CONTRIBUTED PAPERS 08:00-10:00 - *Bourqueil*

### Fungi 1

*Ann Hajek & Helen Hesketh*

- 08:00 **77** ***Entomophaga maimaiga* in *Lymantria dispar* in Eastern Europe** - **Ann Hajek**<sup>1</sup>, Daniela Pilarska<sup>2,3</sup>, Milan Zubrik<sup>1</sup>; <sup>1</sup>Department of Entomology, Cornell University, Ithaca, New York, United States; <sup>2</sup>New Bulgarian University, Department of Natural Sciences Sofia, Bulgaria; <sup>3</sup>Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences Sofia, Bulgaria; <sup>4</sup>National Forest Centre, Forest Research Institute, Forest Protection and Game Management, Banska Stiavnica, Slovakia
- 08:15 **78** **Termite choice of direction to pathogen odor related with nestmate olfactory signals** - **Aya Yanagawa**<sup>1</sup>, Tomoya Imai<sup>1</sup>, Toshiharu Akino<sup>2</sup>, Toshimitsu Hata<sup>1</sup>, Tsuyoshi Yoshimura<sup>1</sup>, Fumio Yokohari<sup>3</sup>, Yoshihiro Toh<sup>4</sup>; <sup>1</sup>Kyoto University Japan; <sup>2</sup>Kyoto Institute of Technology, Japan; <sup>3</sup>Fukuoka University, Japan; <sup>4</sup>Kyushu University, Japan
- 08:15 **79** **STU Natural occurrence of *Beauveria bassiana* in soil, as infections in stink bugs and as endophytes in bean plants, from organic and conventional fields in Cuba** - **Yordanys Ramos**<sup>1</sup>, Orelvis Portal<sup>2</sup>, Erik Lysøe<sup>3</sup>, Annarella Chea<sup>1</sup>, Luis Rojas<sup>4</sup>, Nicolai Meyling<sup>5</sup>, Ingeborg Klingen<sup>3</sup>; <sup>1</sup>Department of Agronomy, Universidad Central "Marta Abreu" de Las Villas

(UCLV), Santa Clara, Cuba; <sup>2</sup>Department of Biology, UCLV, Santa Clara, Cuba; <sup>3</sup>Norwegian Institute of Bioeconomy, Biotechnology and Plant Health Division, Ås, Norway; <sup>4</sup>Instituto de Biotecnología de las Plantas, UCLV, Santa Clara, Cuba; <sup>5</sup>Department of Plant and Environmental Sciences, University of Copenhagen, Frederiksberg, Denmark

- 08:45 **80-STU Biotic and abiotic factors influencing the virulence of Entomophthoromycota on aphids in cereals** - Stéphanie Saussure<sup>1</sup>, Cecilie Sletteng<sup>2</sup>, Nina Trandum<sup>1,2</sup>, Karin Westrum<sup>1</sup>, Ingeborg Kligen<sup>1</sup>; <sup>1</sup>Norwegian Inst. of Bioeconomy Research, Biotechnology and Plant Health Division, Ås, Norway; <sup>2</sup>Norwegian Univ. of Life Sciences, Ås, Norway
- 09:00 **81 Entomophthoromycota pathogens of insects from Argentina: an updated review** - Claudia Lopez Lastra, Romina Manfrino, Alejandra Gutierrez; Centro de estudios parasitologicos y de vectores, Argentina
- 09:15 **82-STU Incidence of fungal infections on Neotropical ants: environment or the host, which has more influence?** - José Pablo Barrantes<sup>1</sup>, Maria José Monge-Salazar<sup>1</sup>, Milagro Granados-Montero<sup>2</sup>, Priscila Chaverri<sup>1,3</sup>; <sup>1</sup>Escuela de Biología, Universidad de Costa Rica, San José, Costa Rica; <sup>2</sup>Centro de Investigaciones en Protección de Cultivos, Escuela de Agronomía, Universidad de Costa Rica, San José, Costa Rica; <sup>3</sup>Department of Plant Science and Landscape Architecture, University of Maryland, Maryland, United States
- 09:30 **83-STU Incidence of fungal infections on Neotropical ants: environment or the host, which has more influence?** - Eric Clifton<sup>1</sup>, Stefan Jaronski<sup>2</sup>, Erin Hodgson<sup>1</sup>, Aaron Gassmann<sup>1</sup>; <sup>1</sup>Iowa State University, United States; <sup>2</sup>United States Department of Agriculture, Agricultural Research Service, United States
- 09:45 **84 Effect of a predatory mite on transmission of the fungus *Neozygites floridana* in *Tetranychus urticae* populations** - Nina Trandum<sup>1</sup>, Ronny Berdinesen<sup>1</sup>, Judith Pel<sup>2</sup>, Ingeborg Kligen<sup>3</sup>; <sup>1</sup>Norwegian University of Life Sciences, Norway; <sup>2</sup>J.K. Pell Consulting, United Kingdom; <sup>3</sup>Norwegian Institute of Bioeconomy Research, Norway

10:00-10:30 **COFFEE BREAK**

*Agnès Sorel*

MICROBIAL CONTROL DIVISION  
SYMPOSIUM

10:30-12:30 - *Chinon*

### Next Generation Biopesticides

*Carrie Hauxwell*

- 10:35 **85 Using bumblebees for targeted application of biopesticides** - Sarah Van Beneden, Soraya Franca Marlies Vleugels, Felix Wäcker; Biobest Ilse Velden Westerlo, Belgium
- 11:00 **86 Working with insect pathogen ecology for better biocontrol delivery** - Michael Brownbridge<sup>1</sup>, Travis Glare<sup>2</sup>; <sup>1</sup>Vineland Research and Innovation Centre, Vineland Station, Canada; <sup>2</sup>Bio-Protection Research Centre, Lincoln University, Lincoln, New Zealand
- 11:25 **87 Characteristics of novel bacterial insecticides/miticides/nematicides from *Chromobacterium subtsugae* and *Burkholderia rinojensis*** - Timothy Johnson, Pamela Marrone; Marrone Bio Innovations, United States
- 11:50 **88 Regulatory implications of new technologies** - Roma Gwynn; Rationale, United Kingdom

CONTRIBUTED PAPERS

10:30-12:30 - *Vouvray*

### Virus 3

*Robert Possee & Jenny Cory*

- 10:30 **89-STU RACK1, a ribosomal protein involved in signaling, stress response and viral translation** - Evelyne Einhorn, Franck Martin, Carine Meignin, Jean-Luc Imler; Institut de biologie moléculaire et cellulaire, CNRS UPR9022, Strasbourg, France
- 10:45 **90-STU Resistance to baculoviruses in the midgut of *Adoxophyes honmai*** - Kento Iwata, Yasuhiro Kunimi, Maki N. Inoue, Madoka Nakai; Tokyo University of Agriculture and Technology, Japan
- 11:00 **91-STU Insect immune system to determine baculoviruses host specificity** - Yu-Wei Chen, Yueh-Lung Wu; Department of Entomology, National Taiwan University, Taiwan
- 11:15 **92-STU The role of pathogen diversity on the evolution of resistance in an insect** - Leon Yu Zheng Li, Jenny Cory; Simon Fraser University (SFU) – Department of Biological Sciences, Burnaby, British Columbia, Canada

- 11:30 **93 Pathogen competition in the cabbage looper, *Trichoplusia ni*: are multiple pathogens more effective than one?** - Jennifer Scholefield, Jenny Cory; Simon Fraser University (SFU) – Department of Biological Sciences, Burnaby, British Columbia, Canada
- 11:45 **94 Successive passages of mixed genotype virus populations: influence of the insect host colony** - Benoit Graillot<sup>1</sup>, Christine Blachere-Lopez<sup>1,3</sup>, Samantha Besse<sup>2</sup>, Myriam Siegwart<sup>4</sup>, Miguel Lopez-Ferber<sup>1</sup>; <sup>1</sup>Laboratoire de Génie de l'Environnement Industriel, Ecole Nationale Supérieure des Mines d'Alès, France; <sup>2</sup>Natural Plant Protection, Arysta LifeSciences, Pau, France; <sup>3</sup>INRA, Alès, France; <sup>4</sup>Plant Pathology Unit UR 407 INRA Montfavet, France
- 12:00 **95 Observations on a persistent baculovirus infection of *Trichoplusia ni* cells in culture** - Robert Possee, Sarah Irons, Linda King; Oxford Brookes University, Headington Campus, Oxford, United Kingdom
- 12:15 **96 Molecular response of *Manduca sexta* immune tissues to parasitization by the bracovirus associated wasp *Cotesia congregata*** - Germain Chevignon<sup>1</sup>, Sébastien Cambier<sup>2</sup>, Corinne Da Silva<sup>3</sup>, Julie Poulain<sup>3</sup>, Sébastien Moreau<sup>1</sup>, Jean-Michel Drezen<sup>1</sup>, Elisabeth Huguet<sup>1</sup>; <sup>1</sup>Institut de recherche sur la biologie de l'insecte, CNRS UMR7261, Université François Rabelais, Tours, France; <sup>2</sup>Luxembourg Institute of Science and Technology, Belvaux, Luxembourg; <sup>3</sup>Genoscope-Centre national de séquençage, CEA Evry, France

CONTRIBUTED PAPERS

10:30-12:30 - *Bourqueil*

### Microsporidia

*Susan Bjornson*

- 10:30 **97 Microsporidia – Emergent Pathogens in the Global Food Chain** - Grant Stentiford; Centre for Environment, Fisheries and Aquaculture Science, Weymouth, Dorset, United Kingdom
- 10:45 **98-STU Genome evolution and pre-mRNA splicing in microsporidia and early-diverging fungi** - Thomas A. Whelan<sup>1</sup>, Nicole T. Lee<sup>1</sup>, C. Alisha Quandt<sup>2</sup>, Timothy Y. James<sup>2</sup>, Naomi M. Fast<sup>1</sup>; <sup>1</sup>Biodiversity Research Centre and Department of Botany, University of British Columbia, Canada; <sup>2</sup>Department of Ecology and Evolutionary Biology, University of Michigan, United States
- 11:00 **99 Molecular phylogenetics as a reason for redefinition of two classical genera of Microsporidia: *Nosema* and *Vairimorpha*** - Yuri Tokarev<sup>1</sup>, Charles Vossbrinck<sup>2</sup>; <sup>1</sup>All-Russian Institute of Plant Protection, Russia; <sup>2</sup>The Connecticut Agricultural Experiment Station, United States
- 11:15 **100 Transcriptome and Prokaryotic Expression Analysis of HMG1 of *Nosema bombycis*** - Jiping Liu<sup>1,2</sup>; <sup>1</sup>College of Animal Science, South China Agricultural University, Wushan, Guangzhou, China; <sup>2</sup>Regional Sericulture Training centre for Asia and Pacific, South China Agriculture University, Wushan, Guangzhou, China
- 11:30 **101 Specific nested-PCR and LAMP methods to detect the spore wall protein gene of *Enterocytozoon hepatopenaei* that causes slow growth in penaid shrimp** - Pattana Jaroenlak<sup>1,2</sup>, Piyachat Sanguanrut<sup>2,3</sup>, Paul Salachan<sup>2</sup>, Bryony Williams<sup>4</sup>, Grant Stentiford<sup>5</sup>, Timothy Flegel<sup>6</sup>, Kallaya Sritunyalucksana<sup>3,6</sup>, Ornchuma Itsathitphisarn<sup>1,2</sup>; <sup>1</sup>Department of Biochemistry, Faculty of Science, Mahidol University, Bangkok, Thailand; <sup>2</sup>Center of Excellence for Shrimp Molecular biology and Biotechnology, Faculty of Science, Mahidol University, Bangkok, Thailand; <sup>3</sup>Shrimp-Virus Interaction Laboratory, National Center for Genetic Engineering and Biotechnology, Bangkok, Thailand; <sup>4</sup>Biosciences, College of Life and Environmental Sciences, University of Exeter, Devon, United Kingdom; <sup>5</sup>CEFAS, Weymouth, Dorset, United Kingdom; <sup>6</sup>National Center for Genetic Engineering and Biotechnology, National Science and Technology Development Agency, Thailand Science Park, Pathumthani, Thailand
- 11:45 **102 A pesticide and an intracellular microsporidial parasite target *Drosophila* lipid stores in an unusual "competition" between a natural pathogen and an environmental poison** - Adrien Franchet<sup>1</sup>, Sebastian Niehus<sup>1</sup>, Dominique Ferrandon<sup>1,2</sup>; <sup>1</sup>University of Strasbourg Institute for Advanced Study (USIAS), CNRS UPR9022, France; <sup>2</sup>Institut de Biologie Moléculaire et Cellulaire (IBMC) – CNRS - Strasbourg, France
- 12:00 **103 *Hyperspora aquatica* n.gen., n.sp., a hyperparasitic microsporidian infecting paramyxid protists is closely related to crustacean-infecting taxa** - Grant Stentiford; CEFAS,

**Bacteria 3***Baltasar Escriche & Ming Sun*

- 10:30 **104** Resistance to Bt maize by western corn rootworm: inheritance, fitness costs and cross-resistance - Aaron Gassmann; Iowa State University, United States
- 10:45 **105** Insect resistance to *Bacillus thuringiensis* Cry3Aa toxin is associated with a novel ABC protein - Yannick Pauchet<sup>1</sup>, Anne Bretschneider<sup>1</sup>, Sylvie Augustin<sup>2</sup>, David Pauron<sup>3</sup>, David Heckel<sup>1</sup>; <sup>1</sup>Max Planck Institute for Chemical Ecology, Jena, Germany; <sup>2</sup>INRA Orléans UR0633, France; <sup>3</sup>Institut Sophia Agrobiotech, INRA PACA, Sophia Antipolis, France
- 11:00 **106-STU** The limited role of *Bombyx mori* ABCC3 as a Cry toxin receptor in comparison to ABCC2 - Haruka Endo<sup>1,2</sup>, Fumika Ichino<sup>1</sup>, Satomi Adegawa<sup>1</sup>, Hiroko Tabunoki<sup>1</sup>, Ryoichi Sato<sup>1</sup>; <sup>1</sup>Tokyo University of Agriculture and Technology, Japan; <sup>2</sup>Research Fellow of Japan Society for the Promotion of Science, Japan
- 11:15 **107-STU** Multi-binding ability to functional receptors and BmABCC2 dependent cytotoxicity-relevant property of the domain II loop region of Cry1Aa - Satomi Adegawa, Shingo Kikuta, Ryoichi Sato; Graduate School of Bio-Applications and Systems Engineering, Tokyo University of Agriculture and Technology, Japan
- 11:30 **108** Comparative Analysis of Gene Expression Profiles in Cry1Ac Resistant and Susceptible Strains of *Heliothis virescens* - Omaththage Perera<sup>f</sup>, Cris Oppert, Jereme Jackson, Anaïs Castagnola, Juan Luis Jurat-Fuentes; United States Department of Agriculture, Agricultural Research Service, Southern Insect Management Research Unit Stoneville, MS, United States
- 12:00 **109** Differential induction of immune system related genes in *Spodoptera exigua* after Vip3Ca challenge - Patricia Hernandez-Martinez, Baltasar Escriche; Departamento de Genética, and Estructura de Recerca Interdisciplinar en Biotecnología i Biomedicina, Universitat de València, Spain
- 12:00 **110** Microevolutionary mechanisms of wax moth *Galleria mellonella* resistance to *Bacillus thuringiensis* - Ekaterina Grizanova<sup>1</sup>, Tariq Butt<sup>2</sup>, Andreas Vilcinskas<sup>3</sup>, Ivan Dubovskiy<sup>1</sup>; <sup>1</sup>Institute of Systematic and Ecology of Animals, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia; <sup>2</sup>Dept of Biosciences, College of Science, Swansea University, United Kingdom; <sup>3</sup>Institute for Insect Biotechnology, Justus-Liebig University, Giessen, Germany
- 12:15 **111** Fitness costs associated with multi-toxin resistance in the cabbage looper (*Trichoplusia ni*) - Guillaume Tetreau<sup>1,2</sup>, Ran Wang<sup>1,3,4</sup>, Ping Wang<sup>1</sup>; <sup>1</sup>Department of Entomology, Cornell University, New York State Agricultural Experiment Station, NY, United States; <sup>2</sup>CNRS-IFREMER: UMR5244, Université de Perpignan Université de Montpellier, OMS/WHO, Perpignan, France; <sup>3</sup>Department of Entomology, Nanjing Agricultural University, Nanjing, China; <sup>4</sup>Institute of Plant and Environment Protection, Beijing Academy of Agriculture and Forestry Sciences, Beijing, China

**OPTIONAL EXCURSION TO AMBOISE**

- 12:30-13:00 Distribution Lunch bag *Hall*
- 13:00-17:30 Excursion to Amboise Castle and le Clos Lucé

**GARDEN PARTY AT THE DOMAINE DE CANDÉ**

- 16:30 Bus departure *Outside Vinci*
- 17:30 & 18:30 Optional castle visit
- 18:00 5K Race
- 19:00 Barbecue

**WEDNESDAY – 27 July**

- 07:30-08:30 **Qi Gong** *Foyer*
- 08:00-17:00 **Registration** *Hall*

**Next Generation Sequencing***David Bass & Helen Hesketh*

- 08:30 **112** High-Throughput Sequencing and Bioinformatic Tools for Invertebrate Pathology - an Overview - Ronny Van Aerle; European Union Reference Laboratory for Crustacean Diseases, Centre for Environment, Fisheries and Aquaculture Science, Weymouth, United Kingdom
- 09:00 **113** Next generation sequencing - a powerful approach to assess potential effects of BCAs on microbial communities in soil - Juerg Enkerli<sup>1</sup>, Johanna Mayerhofer<sup>1</sup>, Franco Widmer<sup>1</sup>, Martin Hartmann<sup>2</sup>; <sup>1</sup>Institute for Sustainability Sciences Agroscope, Zürich, Switzerland; <sup>2</sup>Forest Soils and Biogeochemistry, Swiss Federal Research Institute WSL, Birmensdorf, Switzerland
- 09:30 **114** Using dual-RNAseq to study host-pathogen interactions: data generation and analysis - Henrik Hjarvard De Fine Licht; Section for Organismal Biology, Department of Plant and Environmental Sciences, University of Copenhagen (PLEN), Frederiksberg, Denmark
- 10:00 **115** Big data and little *Metarhizium*: evolution and interactions of an endophytic insect pathogenic fungus - Brian Lovett, Raymond St. Leger; Department of Entomology, University of Maryland (UMD), College Park, MD, United States

**Nematodes***David Shapiro-Ilan*

- 08:30 **116** Dissecting the immune defence against the entomopathogenic nematodes: fluctuation of Cecropin and haemocytes during infection of *Spodoptera exigua* - Reyhaneh Darsoei, Javad Karimi; Ferdowsi University of Mashhad (FUM), Biocontrol and Insect Pathology Lab, Dept of Plant Protection, School of Agriculture, Mashhad, Iran
- 08:45 **117** Who one associates with matters: Role of *Xenorhabdus bovienii* (Enterobacteriaceae) symbionts on the fitness of its *Steinernema* nematode hosts - S.Patricia Stock, John McMullen; Department of Entomology, University of Arizona Tucson, AZ, United States
- 09:00 **118** Curative Control of the Peachtree Borer Using Entomopathogenic Nematodes - David Shapiro-Ilan<sup>1</sup>, Ted Cottrell<sup>1</sup>, Russ Mizell III<sup>2</sup>, Dan Horton<sup>3</sup>; <sup>1</sup>USDA-ARS, United States; <sup>2</sup>University of Florida, United States; <sup>3</sup>University of Georgia, United States
- 09:15 **119-STU** Attraction of entomopathogenic nematode isolates to insect feeding is driven by their previous association with wild or domesticated highbush blueberry (*Vaccinium corymbosum*) plants - Monique Rivera, Albrecht Koppenhofer; Rutgers University, United States
- 09:30 **120-STU** Evaluation of the above-ground application of entomopathogenic nematodes for the control of diapausing codling moth (*Cydia pomonella* L.) under natural conditions - Deidre Odendaal, Matthew Addison, Antoinette Malan; Department of Conservation Ecology and Entomology, Stellenbosch University, South Africa
- 09:30 **121-STU** The influence of orchard age on entomopathogenic fungi and nematode population dynamics - Sonnica Albertyn<sup>1</sup>, Martin Hill<sup>1</sup>, Moore Sean; <sup>1</sup>Rhodes University, Department of Zoology and Entomology, Grahamstown, South Africa; <sup>2</sup>Citrus Research International, Port Elizabeth, South Africa
- 10:00 **122** Potential of entomopathogenic fungi and nematodes against *Parahyppota caestrum* in laboratory assays - Monica Oreste<sup>1</sup>, Eustachio Tarasco<sup>1</sup>, Luca Ruiu<sup>2</sup>; <sup>1</sup>Department of Soil, Plant and Food Science, University of Bari Aldo Moro (DISSPA) – Italy; <sup>2</sup>Department of Agriculture, University of Sassari – Italy
- 10:15 **123** Microbial control of *Cossus cossus* with entomopathogenic nematodes and fungi in laboratory and field assays - Rocco Addante<sup>1</sup>, Monica Oreste<sup>1</sup>, Angela D'Accolti<sup>1</sup>, Luca Ruiu<sup>2</sup>, Eustachio Tarasco<sup>1</sup>; <sup>1</sup>Department of Soil, Plant and Food Sciences, University of Bari Aldo Moro, Italy; <sup>2</sup>Department of Agriculture, University of Sassari, Italy

**Virus 4***Bryony Bonning & Anne Dalmon*

- 08:30 **124-STU** *In-vitro* transmission of the Chronic Bee Paralysis Virus and co-exposition with a neonicotinoid in the honeybee - Marianne Coulon<sup>1,2</sup>, Frank Schurr<sup>1</sup>, Nicolas Cougoule<sup>1</sup>, Anne Dalmon<sup>2</sup>, Cédric Alaux<sup>2</sup>, Yves Le Conte<sup>2</sup>, Richard Thiery<sup>1</sup>, Magali Ribiere-Chabert<sup>1</sup>, Eric Dubois<sup>1</sup>; <sup>1</sup>Laboratoire de Sophia Antipolis, Anses, Sophia-Antipolis, France; <sup>2</sup>INRA PACA, Abeilles et environnement, UR406 Avignon, France
- 08:45 **125-STU** Diversity and evolution of Sinaivirus and related viruses in honeybees and wild hymenoptera - Diane Bigot<sup>1</sup>, Elisabeth Herniou<sup>1</sup>, Anne Dalmon<sup>2</sup>, Nicolas Galtier<sup>3</sup>, Philippe Gayral<sup>1</sup>; <sup>1</sup>Institut de recherche sur la biologie de l'insecte, CNRS UMR7261, Université François Rabelais, Tours, France; <sup>2</sup>INRA PACA, Abeilles et environnement, UR406 Avignon, France; <sup>3</sup>ISEM, Université Montpellier II, CNRS UMR5554, Montpellier, France
- 08:45 **126-STU** An opposite effect of *Dicistroviridae* on the RNA interference defense mechanism of their host, *Bombus terrestris* - Kaat Cappelle<sup>1</sup>, Guy Smaghe<sup>1</sup>, Maarten Dhaenens<sup>2</sup>, Ivan Meeus<sup>1</sup>; <sup>1</sup>Department of Crop Protection, Faculty of Bioscience Engineering, Universiteit Gent, Belgium; <sup>2</sup>Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, Universiteit Gent, Belgium
- 09:15 **127** Honeybee (*Apis mellifera*) viruses or bee (Apiformes) viruses? - Anne Dalmon, Virginie Diévert, Maxime Thomasson, Bernard Vaissière, Yves Le Conte, Laurent Guilbaud, Mickaël Henry; INRA PACA, Abeilles et environnement, UR406 Avignon, France
- 09:30 **128** Infection dynamics of honeybee viruses in AmE-711 cells - Jimena Carrillo-Tripp<sup>1</sup>, Michael Goblirsch<sup>2</sup>, Adam Dolezal<sup>1</sup>, W. Miller<sup>1</sup>, Amy Toth<sup>1</sup>, Bryony Bonning<sup>2</sup>; <sup>1</sup>Iowa State University, United States; <sup>2</sup>University of Minnesota, United States
- 09:45 **129** Occurrence, Pathology, and Ultrastructure of an Iridovirus and Cytoplasmic Polyhedrosis Virus Occurring in Daphnids in the Czech Republic - Jiri Vavra<sup>1</sup>, Bily Tomas<sup>1</sup>, Jana Nebesrova<sup>1</sup>, Brian Federici<sup>2</sup>; <sup>1</sup>Faculty of Science, Charles University, Praha, Czech Republic; <sup>2</sup>University of California, Riverside, United States
- 10:00 **130** *In vitro* transcriptomic analyses of the Aphid's secondary symbiont, *Hamiltonella defensa* - Germain Chevignon, Kerry Oliver, Michael Strand; Department of Entomology, University of Georgia (UGA), Athens, United States
- 10:15 **131** A diverse array of new viral sequences identified in worldwide populations of the Asian citrus psyllid (*Diaphorina citri*) using viral metagenomics - Shahideh Nouri<sup>1</sup>, Nida Salem<sup>2</sup>, Jared Nigg<sup>1</sup>, Bryce Falk<sup>1</sup>; <sup>1</sup>University of California (UC Davis), United States; <sup>2</sup>The University of Jordan, Amman, Jordan

**Microbial control 2***Nina Jenkins*

- 08:30 **132** The chemical inactivation of *H. armigera* nucleopolyhedrovirus (HearNPV) on chickpea (*Cicer arietinum*) and other legume crops with studies of its phytochemical mechanism on chickpea - Aliyu Aminu, Phillip Stevenson, David Grzywacz; Natural Resources Institute, University of Greenwich, Chatham, Kent, United Kingdom
- 08:45 **133** Temperature effects on time-to-death, *in vivo* production and insecticidal activity of *Agrotis ipsilon* baculovirus - Robert Behle; United States Department of Agriculture, Agricultural Research Service (USDA-ARS), Illinois, United States
- 09:00 **134** Controlling false codling moth in citrus with a novel Alphabaculovirus, *Cryptophlebia peltastica* NPV, and a dual isolate *Betabaculovirus* preparation, *Cryptophlebia leucotreta* GV - Sean Moore; Citrus Research International (CRI), Humewood, South Africa
- 09:15 **135** Characterization of *Helicoverpa armigera* nucleopolyhedrovirus in Brazil - Fernando Valicente, Victor Costa, Marcus Soares, Francisco Dimate, Fabrício Morgado, Bergmann Ribeiro; Embrapa Maize and Sorghum, Sete Lagoas, MG, Brazil
- 09:30 **136-STU** Effect of the *Chrysodeixis chalcites* single nucleopolyhedrovirus (ChchSNPV) chitinase upon the insecticidal activity of several other alphabaculoviruses - Eduardo Aguirre<sup>1,2</sup>, Oihane Simón<sup>2</sup>, Trevor Williams<sup>3</sup>, Primitivo

Caballero<sup>1,2</sup>; <sup>1</sup>Departamento de Producción Agraria, Universidad Pública de Navarra (UPNA), Pamplona, Spain; <sup>2</sup>Instituto de Agrobiotecnología – CSIC-UPNA, Mutilva, Spain; <sup>3</sup>Instituto de Ecología AC, Xalapa, Veracruz, Mexico

- 09:45 **137-STU** Alphabaculovirus of *Mamestra brassicae* (Lepidoptera: Noctuidae): Insecticidal activity against several lepidopteran pests - Isabel M. Belda<sup>1,2</sup>, Maite Arrizubieta<sup>1</sup>, Ines Beperet<sup>1</sup>, Trevor Williams<sup>3</sup>, Primitivo Caballero<sup>1,2</sup>; <sup>1</sup>Departamento de Producción Agraria, Universidad Pública de Navarra (UPNA), Pamplona, Spain; <sup>2</sup>Instituto de Agrobiotecnología – CSIC-UPNA, Mutilva, Spain; <sup>3</sup>Instituto de Ecología AC, Xalapa, Veracruz, Mexico
- 10:00 **138** Baculovirus synergism: investigating mixed alphabaculovirus and betabaculovirus infections in the false codling moth, *Thaumatotibia leucotreta*, for improved pest control - Michael Jukes<sup>1</sup>, Caroline Knox<sup>1</sup>, Martin Hill<sup>1</sup>, Sean Moore<sup>2</sup>, Lukasz Rabalski<sup>3</sup>, Boguslaw Szewczyk<sup>3</sup>; <sup>1</sup>Rhodes University (RU), Grahamstown, South Africa; <sup>2</sup>Citrus Research International (CRI) Humewood, Port Elizabeth, South Africa; <sup>3</sup>Department of Recombinant Vaccines, Intercollegiate Faculty of Biotechnology, University of Gdansk and Medical University of Gdansk, Poland
- 10:15 **139** Characterization of a Colombian entomopathogenic virus isolated from the sugarcane borer *Diatraea* spp. (Crambidae) - Gloria Barrera<sup>1</sup>, Carolina Ruiz<sup>1</sup>, Juliana Gómez<sup>1</sup>, Paula Esquinas<sup>2</sup>, Laura Villamizar<sup>1</sup>; <sup>1</sup>Corporación Colombiana de Investigación Agropecuaria (Corpoica), Cundinamarca, Colombia; <sup>2</sup>Universidad Nacional de Colombia, Colombia

10:30-11:00 COFFEE BREAK

*Agnès Sorel*10:30-13:00 - *Agnès Sorel***POSTER SESSION**

Posters should be displayed  
from Monday morning until 2pm Thursday

12:00-13:30 COCKTAIL LUNCH

*Agnès Sorel*

12:00-13:30 ICTV meeting

*Bourqueil*

Baculovirus and Nudivirus Study Group

BACTERIA DIVISION SYMPOSIUM

13:30-15:30 - *Chinon***Unity and diversity of Entomopathogenic bacteria***Sophie Gaudriault & David Clarke*

- 13:30 **140** Insect Pathogenicity Determinants of Plant-Associated *Pseudomonads* - Christoph Keel<sup>1</sup>, Peter Kupferschmied<sup>1</sup>, Maria Péchy-Tarr<sup>1</sup>, Céline Terrettaz<sup>1</sup>, Pascale Flury<sup>2</sup>, María Pilar Vesga Aguado<sup>2</sup>, Monika Maurhofer<sup>2</sup>; <sup>1</sup>University of Lausanne (UNIL) – Department of Fundamental Microbiology, Lausanne, Switzerland; <sup>2</sup>Swiss Federal Institute of Technology Zurich Plant Pathology Group, Institute for Integrative Biology, Zurich, Switzerland
- 13:55 **141** *Photorhabdus* toxins affecting the cytoskeleton - Klaus Aktories; Institute of Experimental and Clinical Pharmacology and Toxicology, University of Freiburg, Germany
- 14:20 **142** *Photorhabdus* Virulence Cassettes: A nano-syringe based toxin secretion and delivery system - Joseph Healey<sup>1</sup>, Guowei Yang<sup>2</sup>, Isabella Vlisidou<sup>3</sup>, Alexia Hapeshi<sup>1</sup>, Nick Waterfield<sup>1</sup>; <sup>1</sup>Division of Biomedical Sciences. Microbiology and Infection unit. Warwick University Medical School, Coventry, United Kingdom; <sup>2</sup>Beijing Pathogen Institute (BPI), China; <sup>3</sup>Bristol University, Life Sciences department., Bristol, United Kingdom
- 14:45 **143** Comparative genomics in the entomopathogenic genus *Xenorhabdus*: insight into the XaxAB binary cytolysin-encoding locus - Gaëlle Bisch, Jean-Claude Ogier, Sylvie Pages, Anne Lanois, Alain Givaudan, Sophie Gaudriault; Diversité, Génomes Interactions Microorganismes – Insectes, INRA, UMR1333, Université de Montpellier, France
- 15:05 **144** Virulence determinants of the beepathogenic species *Paenibacillus larvae* - Elke Genersch; Institute for Bee Research (LIB), Hohen Neuendorf, Germany



## Fungi 2

Stefan Jaronski &amp; Jørgen Eilenberg

- 13:30 **145** Crude extracts secreted by entomopathogenic mitospic ascomycetes show potential for *Ceratitis capitata* (Wiedemann) (Diptera; Tephritidae) and *Drosophila suzukii* (Matsumura) (Diptera; Drosophilidae) control - Maria Fernandez-Bravo, Inmaculada Garrido-Jurado, Meryeme El-Betar, Elodie Romero, Meelad Yousef, Enrique Quesada-Moraga; University of Córdoba, Córdoba, Spain
- 13:45 **146-STU** *Agrobacterium tumefaciens*-mediated transgenic *Beauveria bassiana* JEF-007 with reduced virulence against bean bug - Sihyeon Kim, Se Jin Lee, Yi-Ting Yang, Jae Su Kim; Chonbuk National University, South Korea
- 14:00 **147** Virulence of commercial strains of *Beauveria bassiana* and *Metarhizium brunneum* against walnut twig beetle adults and impact on brood production - Louela Castrillo<sup>1</sup>, John Vandenberg<sup>2</sup>, Michael Griggs<sup>2</sup>, Robert Camp<sup>3</sup>, Bryan Mudder<sup>4</sup>, Adam Taylor<sup>3</sup>, Albert Mayfield<sup>4</sup>; <sup>1</sup>Department of Entomology, Cornell University, Ithaca, United States; <sup>2</sup>USDA ARS, Robert W. Holley Center for Agriculture and Health, Ithaca, United States; <sup>3</sup>Department of Forestry, Wildlife and Fisheries, University of Tennessee, Knoxville, United States; <sup>4</sup>USDA Forest Service – Southern Research Station, Asheville, United States
- 14:15 **148** Strategic approach in application of fungal biopesticides: Ecological Biocontrol - Jae Su Kim, Se Jin Lee<sup>1</sup>, Sihyeon Kim<sup>1</sup>, Mi Rong Lee<sup>1</sup>, Jong Cheol Kim<sup>1</sup>, Taek Su Shin<sup>2</sup>, Tae Hoon Kim<sup>2</sup>; <sup>1</sup>Department of Agricultural Biology, College of Agricultural & Life Sciences, Chonbuk National University, Jeonju, Korea; <sup>2</sup>Crop Protection R&D Center, Farm Hannong (LG Affiliated Co.), Nonsan, Korea
- 14:30 **149-STU** Natural occurrence of entomopathogenic fungi in apple orchards in Germany related to cropping system and region and evaluation of their efficacy for biocontrol of *Cydia pomonella* - Carina Ehrich<sup>1</sup>, Jessica Reuscher<sup>2</sup>, Dietrich Stephan<sup>1</sup>; <sup>1</sup>Julius Kühn-Institut, Institute for Biological Control, Darmstadt, Germany; <sup>2</sup>Frankfurt University of Applied Sciences, Germany
- 14:45 **150** Characterization and virulence of *Beauveria bassiana* associated with auger beetle (*Sinoxylon anale*) infesting *Pimenta dioica* - Senthil Kumar C M, Jacob T K, Devasahayam S, Sharon D'Silva, Nandeesh P G; ICAR-Indian Institute of Spices Research, Kozhikode, Kerala, India
- 15:00 **151-STU** Involvement of Tenecin3 in the infection process of *Tenebrio molitor* by *Beauveria bassiana* - Sevasti Maistrou, Nicolai Meyling, Annette Jensen, Caroline Zanchi; Department of Plant and Environmental Sciences, University of Copenhagen, Frederiksberg, Denmark

## Virus 5

Ikbal Agah Ince &amp; Sassan Asgari

- 13:30 **152-STU** Interactions between the salivary gland hypertrophy virus and its host immune system - Irene Meki<sup>1,2</sup>, Ikbal Ince<sup>3</sup>, Henry Kariithi<sup>4</sup>, Drion Boucias<sup>5</sup>, Just Vlask<sup>1</sup>, Monique Van Oers<sup>1</sup>, Adly Abd-Alla<sup>2</sup>; <sup>1</sup>Laboratory of Virology, Wageningen University, Netherlands; <sup>2</sup>Insect Pest Control Laboratories, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, Vienna, Austria – Austria; <sup>3</sup>Department of Medical Microbiology, Acibadem University, Istanbul, Turkey; <sup>4</sup>Biotechnology Research Institute, Kenya Agricultural Livestock Research Organization, Nairobi, Kenya; <sup>5</sup>Department of Entomology and Nematology, University of Florida, Gainesville, Florida, United States
- 13:45 **153-STU** Host range of *Glossina pallidipes* salivary gland hypertrophy virus (GpSGHV) - Guler Demirbas Uzel<sup>1,2</sup>, Andrew Parker<sup>1</sup>, Robert Mach<sup>2</sup>, Adly Abd-Alla<sup>2</sup>; <sup>1</sup>International Atomic Energy Agency - Insect Pest Control Laboratory (IAEA IPLC), Austria; <sup>2</sup>Vienna University of Technology, Vienna, Austria
- 14:00 **154** Highjack of intracellular signalling pathways and robust immune responses explain the hytrosavirus-induced differential pathologies in two *Glossina* model species - Ikbal Agah Ince<sup>1</sup>, Henry Kariithi<sup>2</sup>, Sjeff Boeren<sup>3</sup>, Irene Meki<sup>4,5</sup>, Edwin Murungi<sup>6</sup>, Everlyne Otieno<sup>6</sup>, Steven Ger Nyanjom<sup>6</sup>, Monique Van Oers<sup>4</sup>, Just M. Vlask<sup>4</sup>, Adly Abd-Alla<sup>2</sup>; <sup>1</sup>Acibadem University, Department of Medical Microbiology, School of Medicine, Atasehir, Turkey; <sup>2</sup>Biotechnology Research Institute, Kenya

Agricultural and Livestock Research Organization, Nairobi, Kenya; <sup>3</sup>Laboratory of Biochemistry, Wageningen University, Netherlands; <sup>4</sup>Laboratory of Virology, Wageningen University, Netherlands; <sup>5</sup>Insect Pest Control Laboratories, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, Vienna, Austria; <sup>6</sup>Department of Biochemistry, Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya

- 14:15 **155** The salivary gland proteome of *Glossina m. morsitans*, parasitized with *Trypanosoma b. Brucei* - Henry Kariithi<sup>1</sup>, Sjeff Boeren<sup>2</sup>, Just M. Vlask<sup>3</sup>, Adly Abd-Alla<sup>4</sup>; <sup>1</sup>Biotechnology Research Institute, Kenya Agricultural and Livestock Research Organization, Nairobi, Kenya; <sup>2</sup>Laboratory of Biochemistry, Wageningen University, Netherlands; <sup>3</sup>Laboratory of Virology, Wageningen University, Netherlands; <sup>4</sup>Insect Pest Control Laboratories, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, Vienna, Austria
- 14:30 **156** Characterization of Bustos virus, a new member of the *Negevirus* group isolated from a *Mansonia* mosquito in the Philippines - Ryosuke Fujita<sup>1,2</sup>, Ryusei Kuwata<sup>3</sup>, Daisuke Kobayashi<sup>1</sup>, Arlene Bertuso<sup>4</sup>, Haruhiko Isawa<sup>1</sup>, Kyoko Sawabe<sup>1</sup>; <sup>1</sup>National Institute of Infectious Diseases, Japan; <sup>2</sup>Japan Agency for Medical Research and Development, Japan; <sup>3</sup>Yamaguchi University, Japan; <sup>4</sup>University of the Philippines Manila, Philippines
- 14:45 **157** RNA activation in mosquito cells and its suppression by the dengue virus NS5 protein - Sultan Asad, Mazhar Hussain, Sassan Asgari; The University of Queensland, School of Biological Sciences, Brisbane, Australia
- 15:00 **158** Zika virus epidemic in Americas - Julien Thézè, Nuno Rodrigues Faria, Oliver Pybus; Department of Zoology, University of Oxford, United Kingdom
- 15:15 **159-STU** New RNA virus producing covert infections in field and laboratory insects of *Ceratitis capitata* (Wiedemann) - Angel Llopis-Giménez<sup>1,2</sup>, Rosa Ma González-Martínez<sup>1,2</sup>, Anabel Millán-Leiva<sup>3</sup>, Elena Llácera<sup>4</sup>, Marta Catalá<sup>4</sup>, Alberto Urbaneja<sup>4</sup>, Salvador Herrero<sup>1,2</sup>; <sup>1</sup>Departamento de Genética, Universitat de Valencia, Spain; <sup>2</sup>Estructura de Recerca Interdisciplinària en Biotecnologia i Biomedicina, Universitat de Valencia, Spain; <sup>3</sup>Instituto de Hortofruticultura Subtropical y Mediterránea "La Mayora", CSIC, Malaga, Spain; <sup>4</sup>Instituto Valenciano de Investigaciones Agrarias, Centro de Protección Vegetal y Biotecnología, Unidad Asociada de Entomología, Moncada, Spain

## Microbial control 3

Sean Moore

- 13:30 **160-STU** Whole Genome Sequencing of PhopGV Isolates for Control of *Tuta absoluta* in Tomato and *Phthorimaea operculella* and *Tecia solanivora* in Potato - Andreas Larem, Eva Fritsch, Karin Undorf-Spahn, Jörg Wennmann, Johannes Jehle; Federal Research Centre for Cultivated Plants, Institute for Biological Control, Darmstadt, Germany
- 13:45 **161-STU** Identification of a novel mode of resistance against *Cydia pomonella* granulovirus in codling moth indicates a highly dynamic adaptation in the host population - Annette Sauer<sup>1</sup>, Petr Nguyen<sup>2</sup>, Eva Fritsch<sup>1</sup>, Karin Undorf-Spahn<sup>1</sup>, Kento Iwata<sup>3</sup>, Madoka Nakai<sup>3</sup>, David Heckel<sup>4</sup>, Frantisek Marec<sup>2</sup>, Johannes Jehle<sup>1</sup>; <sup>1</sup>Julius Kühn Institut, Germany; <sup>2</sup>Biology Centre, Czech Republic; <sup>3</sup>Tokyo University of Agriculture and Technology, Japan; <sup>4</sup>Max Planck Institute for Chemical Ecology, Germany
- 14:00 **162** Entomopathogenic fungi as control agents of *Thaumotobia leucotreta* in citrus orchards: efficacy and persistence - Candice Coombes<sup>1</sup>, Martin Hill<sup>1</sup>, Sean Moore<sup>2</sup>, Joanna Dames<sup>3</sup>; <sup>1</sup>Department of Zoology and Entomology, Rhodes University, Grahamstown, South Africa; <sup>2</sup>Citrus Research International, Port Elizabeth, South Africa; <sup>3</sup>Department of Biochemistry and Microbiology, Rhodes University, Grahamstown, South Africa
- 14:15 **163** Control of wireworms in organic potato farming is feasible with an attract-and-kill strategy: technical aspects - Anant Patel, Stefan Vidal, Mario Schumann, Wilhelm Beitz-Heineke, Marina Vemmer; Bielefeld University of Applied Sciences, Department of Engineering Sciences and Mathematics, Bielefeld, Germany
- 14:30 **164** Control of wireworms in organic potato farming is feasible with an attract-and-kill strategy: field trials and mantraps on the way to registration - Stefan Vidal, Anant Patel, Marina Vemmer, Wilhelm Beitz-Heineke, Mario

Schumann; Department of Crop Sciences, University of Göttingen, Germany

- 14:45 **165-STU** Screen bag formulations (SBF) of entomopathogenic *Beauveria* and *Metarhizium* conidia from granular substrates to control *Riptortus pedestris* - [Se Jin Lee](#), Sihyeon Kim, Mi Rong Lee, Jae Su Kim; Chonbuk National University, South Korea
- 15:00 **166-STU** Entomopathogenic fungal library to control *Locusta migratoria* in Korea - [Mi Rong Lee](#), Se Jin Lee, Sihyeon Kim, Jong Cheol Kim, Jae Su Kim<sup>†</sup>; Chonbuk National University, South Korea
- 15:15 **167-STU** Ambrosia beetle mortality and reduced brood production following exposure to microbial control fungi - [Louela Castrillo](#)<sup>1</sup>, Michael Griggs<sup>2</sup>, John Vandenberg<sup>2</sup>; <sup>1</sup>Dept of Entomology, Cornell University, Ithaca, United States; <sup>2</sup>USDA ARS, Robert W. Holley Center for Agriculture and Health, Ithaca, United States

15:30-16:00 COFFEE BREAK

[Agnès Sorel](#)

NEMATODE DIVISION SYMPOSIUM 16:00-18:00 - [Chinon](#)

### Harnessing Metabolites from Entomopathogenic Nematode Symbiotic Bacteria for Broad Use

[David Shapiro-Ilan & Selcuk Hazir](#)

- 16:00 **168** The regulation of secondary metabolism and natural product production in *Photorhabdus* - [David Clarke](#); University College Cork, Ireland
- 16:30 **169** Identification and application of eicosanoid biosynthesis inhibitors synthesized by *Xenorhabdus* and *Photorhabdus* - [Yonggyun Kim](#); Andong National University, South Korea
- 17:00 **170** Using *Photorhabdus* and *Xenorhabdus* metabolites for control of pecan and peach diseases - [Selcuk Hazir](#)<sup>1</sup>, Clive Bock<sup>2</sup>, [David Shapiro-Ilan](#)<sup>2</sup>; <sup>1</sup>Adnan Menderes University Faculty of Arts and Sciences Department of Biology, Turkey; <sup>2</sup>USDA-ARS, Southeastern Fruit and Tree Nut Research Laboratory Byron, United States
- 17:30 **171** Natural products from entomopathogenic bacteria - from bugs to the clinic? [Helge Bode](#); Goethe-University Frankfurt am Main, Merck endowed Chair for Molecular Biotechnology, Dept of Biosciences, Frankfurt am Main, Germany

CONTRIBUTED PAPERS 16:00-18:00 - [Courteline](#)

### Microbial control 4

[Dietrich Stephan](#)

- 16:00 **172** Synergistic combinations of an emulsifiable formulation of *Beauveria bassiana* and a pyrethroid insecticide against insecticide-resistant annual bluegrass weevil, *Listronotus maculicollis*, adults - [Shaohui Wu](#), Albrecht Koppenhofer, Olga Kostromytska; Department of Entomology, Rutgers University, New Brunswick, United States
- 16:15 **173** Residual efficacy of *Beauveria bassiana* (Balsamo) Vuillemin, diatomaceous earth, Imidacloprid against three Coleopteran and one psocid species of stored grains - [Waqas Wakil](#)<sup>1</sup>, Thomas Schmitt<sup>2</sup>; <sup>1</sup>Department of Entomology, University of Agriculture, Faisalabad, Pakistan; <sup>2</sup>Senckenberg German Entomological Institute, Müncheberg, Germany; Institute of Zoology, Faculty of Natural Sciences I, Martin-Luther-University Halle-Wittenberg, Germany; Dept of Biogeography, Faculty of Regional and Environmental Sciences, Trier University, Germany
- 16:30 **174-STU** Biological Efficacy of the Entomopathogenic Fungi *Isaria fumosorosea* as a Biocontrol Agent Against Pest Insects [Katharina Saar](#)<sup>1</sup>, Jasmin Philipp<sup>2</sup>, Edgar Schliephake<sup>2</sup>, Nicolas Maguire<sup>3</sup>, Johannes Jehle<sup>1</sup>, Dietrich Stephan<sup>1</sup>; <sup>1</sup>Julius Kühn-Institute, Darmstadt, Germany; <sup>2</sup>Julius Kühn Institut, Quedlinburg, Germany; <sup>3</sup>University of Applied Science, Department of Life Science Engineering, Gießen, Germany
- 16:45 **175** Fungal entomopathogens as endophytes for plant protection: Can they promote plant growth as well? - [Lara R. Jaber](#)<sup>1</sup>, Juerg Enkerli<sup>2</sup>; <sup>1</sup>Department of Plant Protection, Faculty of Agriculture, University of Jordan, Amman, Jordan; <sup>2</sup>Agroscope, Zurich, Switzerland
- 17:00 **176** Mortality, fecundity and behavior of *Aphis gossypii* Glover feeding on melon leaves endophytically colonized by entomopathogenic fungi - [Natalia Gonzalez Mas](#), Enrique Quesada Moraga; Agricultural and Forestry Sciences, ETSIAM, University of Córdoba. Campus de Rabanales, Córdoba, Spain

CONTRIBUTED PAPERS

16:00-18:00 - [Bourqueil](#)

### Disease of Beneficial Invertebrates 2

[Helen Hesketh](#)

- 16:00 **177** Entomopathogens and contaminant microbes of insects for food and feed value chain in Africa - [Subramanian Sevgan](#), Fiaboe Komi, Ekesi Sunday; International Centre of Insect Physiology and Ecology (icipe), Nairobi, Kenya
- 16:15 **178** Implications of the honeybee microbial community in the response to major parasites and pathogens - [Maria Giovanna Marche](#)<sup>1</sup>, [Ignazio Floris](#)<sup>1</sup>, [Alberto Satta](#)<sup>1</sup>, [Luca Ruiu](#)<sup>1,2</sup>; <sup>1</sup>Department of Agriculture, University of Sassari, Italy; <sup>2</sup>Bioceopest Srl, Technology Park of Sardinia, Tramariglio, Italy
- 16:30 **179** First detection of the *Apis mellifera* filamentous virus (AmFV) in honey bees (*Apis mellifera*) in China - [Chunsheng Hou](#), Beibei Li, Shuai Deng, Yuexiong Luo, [Qingyun Diao](#); Institute of Apicultural Research, Chinese Academy of Agricultural Sciences, China
- 16:45 **180** Trans-generational immune priming in *Tenebrio molitor*: towards the identification of the molecular mechanisms - [Guillaume Tetreau](#)<sup>1</sup>, [Julien Dhinaut](#)<sup>2</sup>, [Philippe Bulet](#)<sup>3</sup>, [Yannick Moret](#)<sup>2</sup>, [Benjamin Gourbal](#)<sup>1</sup>; <sup>1</sup>CNRS-IFREMER : UMR5244, Université de Perpignan, Université de Montpellier, Organisation mondiale de la santé (OMS/WHO), Perpignan, France, <sup>2</sup>Laboratoire Biogéosciences, CNRS UMR6282, Université de Bourgogne, Dijon, France; <sup>3</sup>Laboratoire Andrologie Gérontechnologie Inflammation Modélisation, CNRSFRE3405, Université Joseph Fourier, Grenoble I, France; Platform Biopark Archamps, France,
- 17:00 **181** Molecular cloning and prokaryotic expression of RdRp gene of IAPV - [Shuai Deng](#), [Qingyun Diao](#), [Beibei Li](#), [Chunsheng Hou](#); Institute of Apicultural Research, Chinese Academy of Agricultural Sciences, China

CONTRIBUTED PAPERS

16:00-18:00 - [Vouvray](#)

### Virus 6

[Trevor Williams & Martin Erlandson](#)

- 16:00 **182** Genotype co-occlusion as a novel paradigm for the development of virus-based insecticides: is the evidence sufficiently convincing yet? - [Primitivo Caballero](#)<sup>1,2</sup>, [Ines Beperet](#)<sup>1</sup>, [Oihane Simon](#)<sup>1</sup>, [Maite Arrizubieta](#)<sup>1</sup>, [Miguel Lopez-Ferber](#)<sup>3</sup>, [Trevor Williams](#)<sup>4</sup>; <sup>1</sup>Instituto de Agrobiotecnología, CSIC-UPNA, Mutilva, Spain; <sup>2</sup>Departamento de Producción Agraria, Universidad Pública de Navarra, Pamplona, Spain; <sup>3</sup>Ecole des Mines d'Alès, France; <sup>4</sup>Instituto de Ecología AC, Xalapa, Mexico
- 16:15 **183** Improving infectivity of baculovirus by high-efficiently embedding the enhancing factors into occlusion bodies - [Shili Yang](#), [Ruipeng Ma](#), [Lijuan Zhao](#), [Jia Hu](#), [Chengfeng Lei](#), [Xiulian Sun](#); Wuhan Institute of Virology, Chinese Academy of Sciences, China
- 16:30 **184** Baculovirus efficacy against the fall armyworm varies with intraspecific genetic variation in soybean defence traits - [Ikkei Shikano](#)<sup>1</sup>, [Ketia Shumaker](#)<sup>2</sup>, [Michelle Peiffer](#)<sup>1</sup>, [Gary Felton](#)<sup>1</sup>, [Kelli Hoover](#)<sup>1</sup>; <sup>1</sup>Department of Entomology and Center for Chemical Ecology, Pennsylvania State University, United States; <sup>2</sup>Department of Biological and Environmental Sciences, University of West Alabama, United States
- 16:45 **185** Genetic and biological characterisation of anovel South African *Cydia pomonella* granulovirus (CpGV-SA) with potential for use in resistance management strategies - [Caroline Knox](#)<sup>1</sup>, [Boitumelo Motsoeneng](#)<sup>1</sup>, [Martin Hill](#)<sup>1</sup>, [Sean Moore](#)<sup>2</sup>; <sup>1</sup>Rhodes University, South Africa; <sup>2</sup>Citrus Research International (CRI), South Africa
- 17:00 **186** Baculovirus isolated from *Lymantria dispar* larvae as an example of possible virus adaptation to a new host - [Lukas Rabalski](#)<sup>1</sup>, [Martyna Krejmer-Rabalska](#)<sup>1</sup>, [Iwona Skrzecz](#)<sup>2</sup>, [Boguslaw Szewczyk](#)<sup>1</sup>; <sup>1</sup>Laboratory of Recombinant Vaccines, Intercollegiate Faculty of Biotechnology, University and Medical University, Gdansk, Poland; <sup>2</sup>Forest Research Institute, Sekocin Stary, Poland
- 17:15 **187** Genomics of alphabaculovirus isolates infecting *Mamestra* species from North America and Eurasia - [Martin Erlandson](#)<sup>1</sup>, [Doug Baldwin](#)<sup>1</sup>, [Just Vlak](#)<sup>2</sup>, [David Theilmann](#)<sup>3</sup>; <sup>1</sup>Saskatoon Research and Development Centre, AAFC, Canada; <sup>2</sup>Laboratory of Virology, Wageningen University, Netherlands; <sup>3</sup>Summerland Research and Development Centre, AAFC, Canada
- 17:30 **188** Improved insecticidal activity of Chilo iridescent virus

expressing an insect specific neurotoxin - Remziye Nalcacioglu<sup>1</sup>, Hacer Muratoglu<sup>1</sup>, Aydin Yesilyurt<sup>1</sup>, Arzu Ozgen<sup>1</sup>, Zihni Demirbag<sup>1</sup>, Van Oers Monique<sup>2</sup>, Vlak Just<sup>2</sup>; <sup>1</sup>Karadeniz Technical University, Faculty of Science, Department of Biology, Turkey; <sup>2</sup>Wageningen University, Netherlands

- 17:45 **189** Characterization of the *Baculovirus-Densovirus* interaction when co-infecting the same host - Laila Gasmi<sup>1</sup>, Mylène Ogliastrò<sup>2</sup>, Salvador Herrero<sup>1</sup>; <sup>1</sup>Laboratory of Biotechnological Pest Control, Department of Genetics, and Estructura de Recerca Interdisciplinaria en Biociencia i Biomedicina, Universitat de València, Spain; <sup>2</sup>Laboratory DGMI, UMR 1333, Université Montpellier II, France

18:0-19:45

### Division Business Meetings and Workshops

- |   |                   |
|---|-------------------|
| <b>Microbial Control Division Meeting</b>           | <i>Courteline</i> |
| <b>Nematode Division Meeting</b>                    | <i>Chinon</i>     |
| 'Shooting a worm: insights on nematode photography' |                   |
| J. Eisenback  |                   |
| <b>DBI Division Meeting</b>                         | <i>Bourgueil</i>  |
| 'Coral Diseases' - M. Sweet                         |                   |
| <b>Virus Division Meeting</b>                       | <i>Vouvray</i>    |
| 'Taxonomy of Polydnnaviruses' - M. Strand           |                   |

## THURSDAY – 28 July

- |             |                     |              |
|-------------|---------------------|--------------|
| 07:00-08:00 | <b>Qi Gong</b>      | <i>Foyer</i> |
| 08:00-12:00 | <b>Registration</b> | <i>Hall</i>  |

VIRUS DIVISION SYMPOSIUM 08:00-10:00 - *Descartes*

### Viruses and horizontal gene transfers

*Elisabeth Herniou & Jean-Michel Drezen*

- 08:00 **190** Mechanisms of horizontal genes transfer in Metazoans - Chiara Boschetti, Isobel Eyres, Alastair Crisp, Elton Gargioni Grisoste Barbosa, Timothy Barraclough, Gos Micklem, Alan Tunnacliffe, Department of Chemical Engineering and Biotechnology, University of Cambridge, United Kingdom
- 08:20 **191** Evidence of recent interspecies horizontal genes transfer regarding nucleopolyhedrovirus infection of *Spodoptera frugiperda* - Mariano Belaich<sup>1</sup>, Gloria Barrera<sup>2</sup>, Manuel Patarroyo<sup>3</sup>, Laura Villamizar<sup>2</sup>, Pablo Ghiringhelli<sup>1</sup>, <sup>1</sup>Universidad Nacional de Quilmes, Laboratorio de Ingeniería Genética y Biología Celular y Molecular, Bernal, Argentina; <sup>2</sup>Corporación Colombiana de Investigación Agropecuaria, Cundinamarca, Colombia; <sup>3</sup>Fundación Instituto de Inmunología de Colombia, Bogotá, Colombia
- 08:40 **192** Continuous influx of genetic material from host to virus populations - Gilbert Clément<sup>1</sup>, Jean Peccoud<sup>1</sup>, Aurélien Chateigner<sup>2</sup>, Bouziane Moumen<sup>1</sup>, Richard Cordaux<sup>1</sup>, Elisabeth Herniou<sup>2</sup>; <sup>1</sup>UMR CNRS 7267 Ecologie et Biologie des Interactions, Equipe Ecologie Evolution Symbiose, Université de Poitiers, Poitiers, France; <sup>2</sup>Institut de recherche sur la Biologie de l'Insecte, CNRS UMR 7261, Université François-Rabelais, Tours, France
- 09:00 **193** *Microplitis demolitor* bracovirus DNAs integrate into the genome of host cells - Michael Strand, Department of Entomology, University of Georgia, Athens, United States
- 09:20 **194** Acquisition and Domestication of bracoviral genes in *Spodoptera* spp contributes to their defense against pathogens - Laila Gasmi<sup>1</sup>, Jean-Michel Drezen<sup>2</sup>, Salvador Herrero<sup>1</sup>; <sup>1</sup>Laboratory of Biotechnological Pest Control, Department of Genetics, and Estructura de Recerca Interdisciplinaria en Biociencia i Biomedicina; <sup>2</sup>Institut de recherche sur la Biologie de l'Insecte, CNRS UMR 7261, Université François-Rabelais, Tours, France

CONTRIBUTED PAPERS 08:00-10:00 - *Courteline*

### Fungi 3

*Nicolai Vitt Meyling & Annette Bruun Jensen*

- 08:00 **195** Molecular characterization of icipe EPF isolates: opportunities and challenges - Fathiya Khamis, Nguya Maniania, Komivi Akutse, Levi Ombura, Subramanian Sevgan, Sunday Ekesi; International Center of Insect Physiology and Ecology (ICIPE) – Kenya
- 08:15 **196** The comparative analysis of defense reactions and midgut microbiota of *Galleria mellonella* under development

of mycoses caused by *Metarhizium robertsii* and *Ordyceps militaris* - Olga Yaroslavtseva<sup>1</sup>, Oksana Tomilova<sup>1</sup>, Alex Pervushin<sup>2</sup>, Natalia Kryukova<sup>1</sup>, Ecatherine Chertkova<sup>1</sup>, Olga Polenogova<sup>1</sup>, Maxim Tyurin<sup>1</sup>, Ivan Dubovskiy<sup>1</sup>, Viktor Glupov<sup>1</sup>, Vadim Kryukov; <sup>1</sup>Institute of Systematics and Ecology of Animals, Siberian Branch of Russian Academy of Sciences, Russia; <sup>2</sup>All-Russian Research Institute of Plant Protection, Russia

- 08:30 **197-STU** The histone deacetylase *HosA* regulates cell cycle, conidiation, virulence and stress tolerance in *Beauveria bassiana* - Qing Cai, Sheng-Hua Ying, Ming-Guang Feng; Zhejiang University, Hangzhou, Zhejiang Province, China
- 08:45 **198-STU** A novel vacuolar protein is required for the *in vitro* asexual cycle and full virulence of *Beauveria bassiana*; Zhenjian Chu, Sheng-Hua Ying, Ming-Guang Feng; Zhejiang University, Hangzhou, Zhejiang Province, China
- 09:00 **199-STU** Characterization of high osmolarity glycerol pathway essential for environmental adaptation in *Beauveria bassiana*; Jing Liu, Sheng-Hua Ying, Ming-Guang Feng Zhejiang; University, Hangzhou, Zhejiang Province, China

CONTRIBUTED PAPERS

08:00-10:00 - *Bourgueil*

### Diseases Of Beneficial Invertebrate 3

*Grant Stentiford*

- 08:00 **200** Applications of environmental DNA (eDNA) methods in parasitology - David Bass<sup>1,2</sup>, Georgia Ward<sup>3</sup>, Rose Kerr<sup>1</sup>, Catherine Troman<sup>2</sup>, Corey Holt<sup>1</sup>, Kelly Bateman<sup>1</sup>, Beth Okamura<sup>2</sup>, Grant Stentiford<sup>1</sup>; <sup>1</sup>European Union Reference Laboratory for Crustacean Diseases and/or Centre for Environment, Fisheries and Aquaculture Science (Cefas), Weymouth, United Kingdom; <sup>2</sup>The Natural History Museum – United Kingdom
- 08:15 **201** Exploring into an emerging disease in the circum-Antarctic keystone predator, the sea star *Odontaster validus* - Laura Núnñez Pons<sup>1,2,3</sup>, Thierry Work<sup>4</sup>, Robert Rameyer<sup>4</sup>, Juan Moles<sup>4</sup>, Carlos Angulo-Preckler<sup>3</sup>, Conxita Avila; <sup>1</sup>Smithsonian Tropical Research Institute (STRI), Panama; <sup>2</sup>Hawai Institute of Marine Biology (HIMB), University of Hawaii at Manoa, Hawaii, United States; <sup>3</sup>Universitat de Barcelona Barcelona, Spain; <sup>4</sup>US Geological Survey, National Wildlife Health Center, Honolulu, United States
- 08:30 **202-STU** Decreased hemolymph refractive index (HRI) and glycogen reserve inclusion (RI) scores in Atlantic Canadian snow crabs, *Chionoecetes opilio*, with bitter crab disease (BCD), with tentative identification of BCD-associated phospholipids identified by untargeted metabolomic analysis of pooled hemolymph samples - Melanie Buote, Spencer Greenwood, Glenda Wright, Rick Cawthorn, Russ Kerr; Atlantic Veterinary College, Charlottetown, Canada
- 08:45 **203-STU** Impact of water temperature on immune-related gene expression in American lobster experimentally infected with White Spot Syndrome Virus - Louise-Marie Roux<sup>1,2</sup>, Philip Byrne<sup>2</sup>, Fraser Clark<sup>1</sup>, Spencer Greenwood; <sup>1</sup>Dept of Biomedical Sciences and Lobster Science Centre, Atlantic Veterinary College, University of Prince Edward Island, Canada; <sup>2</sup>Gulf Biocontainment Unit-Aquatic Animal Health Laboratory, Fisheries and Oceans Canada, Canada; <sup>3</sup>Dept of Pathology and Microbiology, Atlantic Veterinary College, University of Prince Edward Island, Canada
- 09:00 **204-STU** Development of a duplex PCR as screening tool for the detection of Crangon crangon bacilliform virus in the European brown shrimp *Crangon crangon* - Benigna Van Eynde<sup>1,2</sup>, Olivier Christiaens<sup>1</sup>, Daan Delbare<sup>2</sup>, Kelly Bateman<sup>3</sup>, Grant Stentiford<sup>3</sup>, Annette Dulleman<sup>4</sup>, Monique Van Oers<sup>5</sup>, Guy Smagghe<sup>1</sup>; <sup>1</sup>Ghent University, Ghent, Belgium; <sup>2</sup>Institute of Agricultural and Fisheries Research, Ostend, Belgium; <sup>3</sup>European Union Reference Laboratory for Crustacean Diseases, CEFAS, Weymouth, United Kingdom; <sup>4</sup>Wageningen University and Research Center Wageningen, Netherlands
- 09:15 **205** Microbial patters allied to coral disease and bleaching, insights from Kane'Ohe Bay – Oahu (Hawaii) - Laura Núnñez Pons<sup>1,2,3</sup>, Raphael Ritson-Williams<sup>2</sup>, Emilia Sogin<sup>2</sup>, Ross Cunning<sup>2</sup>, Anthony Amend<sup>2</sup>; <sup>1</sup>Smithsonian Tropical Research Institute, Panama; <sup>2</sup>Hawai Institute of Marine Biology, University of Hawaii at Manoa, Hawaii, United States;

CONTRIBUTED PAPERS 08:00-10:00 - *Vouvray*

### Microbial Control 5

*Ben Raymond*

- 08:00 **206-STU** **Controlling Invasive Crustacea** - Jamie Bojko<sup>1</sup>, Alison Dunn<sup>2</sup>, Paul Stebbing<sup>1</sup>, Grant Stentford<sup>1</sup>; <sup>1</sup>CEFAS, Weymouth, Dorset, United Kingdom; <sup>2</sup>University of Leeds, United Kingdom
- 08:15 **207** **Molecular characterization of the plasmid-encoded Pir-like binary toxins isolated from shrimp suffering acute hepatopancreatic necrosis disease or early mortality syndrome (EMS/AHPND)** - Kallaya Sritunyalucksana, Jiraporn Srisala, Suparat Taengchaiyaphum, Anuphap Prachumwat, Timothy Flegel; Shrimp-Virus Interaction Laboratory, National Center for Genetic Engineering and Biotechnology, Bangkok, Thailand
- 08:30 **208** **Comparison of peritrophic matrix proteomics from larval and adult stages of Colorado potato beetle, *Leptinotarsa decemlineata* (Coleoptera: Chrysomelidae): Modeling peritrophic matrix defense against pathogens infecting *per os*** Umut Toprak<sup>1,2</sup>, Emre Caner<sup>1</sup>, Serife Bayram<sup>1</sup>, Dwayne Hegedus<sup>2</sup>, Doug Baldwin<sup>2</sup>, Cathy Coutu<sup>2</sup>, Martin Erlandson<sup>2</sup>, David Heckel<sup>3</sup>; <sup>1</sup>Ankara University, Faculty of Agriculture, Dept. of Plant Protection, Ankara, Turkey; <sup>2</sup>Agriculture and Agri-Food Canada, Saskatoon Research Centre, Saskatoon, SK Canada; <sup>3</sup>Max Planck Institute for Chemical Ecology, Dept. of Entomology, Jena, Germany
- 08:45 **209** **DEBtox modelling of pathogen-mortality data over time; a novel toxicokinetic-toxicodynamic approach to derive dose effects** - Helen Hesketh, Jan Baas; Centre for Ecology Hydrology, Wallingford, United Kingdom
- 09:00 **210** **A putative esterase is involved in toxicity of the mexican strain *Serratia entomophila* Mor4.1 towards larvae of *Phyllophaga* Spp (Coleoptera)** - María Nunéz-Valdez, Manuel Martínez-Tapia, Jianwu Chen, Sarjeet Gill; Centro de Investigación en Dinámica Celular, Instituto de Investigación en Ciencias Básicas y Aplicadas, Universidad Autónoma del Estado de Morelos, Cuernavaca Morelos, Mexico
- 09:15 **211-STU** **Monitoring and expression analysis of *Pseudomonas* protegens CHA0 during colonization of Lepidoptera** - María Del Pilar Vesga Aguado<sup>1</sup>, Pascale Flury<sup>1</sup>, Monika Maurhofer<sup>1</sup>, Christoph Keel<sup>2</sup>; <sup>1</sup>Swiss Federal Institute of Technology, Zurich, Switzerland; <sup>2</sup>Université de Lausanne, Lausanne, Switzerland

10:00-10:30 **COFFEE BREAK** *Agnès Sorel*

10:30 - 12:30 - *Descartes*

### SIP Business Meeting

12:30-14:00 **BUFFET LUNCH** *Agnès Sorel*

12:30-14:00 **Student Competition Jury** *Bourqueil*

MICROSPORIDIA DIVISION SYMPOSIUM 14:00-16:00 - *Bourqueil*

### Host Pathogen interactions

*Susan Bjornson*

- 14:00 **212** **Inhibition of apoptosis is a universal mechanism for intracellular survival of microsporidia?** - Yuliya Sokolova<sup>1,2</sup>, Xavier Alvarez<sup>3</sup>, Lisa Bowers<sup>3</sup>, Elizabeth Didier<sup>3</sup>; <sup>1</sup>Institute of Cytology, Russian Academy of Sciences, St Petersburg, Russia; <sup>2</sup>Louisiana State University School of Veterinary Medicine, Baton Rouge LA, United States; <sup>3</sup>Tulane National Primate Research Center, Covington LA, United States
- 14:30 **213** **Mosquito-Microsporidia Model Systems for Understanding Morphological and Phylogenetic Relationships** James Becnel; U.S. Department of Agriculture Agricultural Research Service, Gainesville, Florida, United States
- 15:00 **214** **Pathogenicity, prevalence and intensity of a microsporidian infection by *Nosema fumiferanae* postvittana subsp. n. in the light brown apple moth, *Epiphyas postvittana*, in California** - Julie Hopper<sup>1,2</sup>, Wei-Fone Huang<sup>3,4</sup>, Leellen Solter<sup>3</sup>, Nicholas Mills<sup>1</sup>; <sup>1</sup>University of California, Berkeley, United States; <sup>2</sup>University of California, Davis, United States; <sup>3</sup>University of Illinois, Urbana-Champaign, United

States, <sup>4</sup>College of Bee Science, Fujian Agriculture and Forestry University, China

- 15:30 **215** **Comparative genomics of microsporidia that infect marine organisms** - Bryony Williams; Biosciences, College of Life and Environmental Sciences, University of Exeter, Devon, United Kingdom

CONTRIBUTED PAPERS

14:00-16:00 - *Courteline*

### Bacteria 4

*Marianne Carey & Shuyuan Guo*

- 14:00 **216** **How to eat a Crystal protein: Crystal protein Cry5B as a novel and powerful anti-infective for humans** - Yan Hu, David Koch, Zeynep Mirza, Thanh-Thanh Nguyen, Gary Ostroff, Raffi Aroian; Program in Molecular Medicine, UMASS Medical School, United States
- 14:15 **217** **A biochemical comparison of VIP3Ab1 and VIP3B insecticidal proteins** - Marc Zack, Megan Sopko, Ted Letherer, Sek Yee Tan, Kenneth Narva; Dow AgroSciences, Indianapolis, United States
- 14:30 **218** **Bio-polymer microencapsulations of *Bacillus thuringiensis* crystal preparations for improved longterm larvicidal activity** - He Xiaolin<sup>1</sup>, He Kanglai<sup>2</sup>, Guo Shuyuan<sup>1</sup>; <sup>1</sup>School of Life Science, Beijing Institute of Technology, Beijing, 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, China
- 219** **Cancelled**
- 14:45 **220** **Enterocyte purge and rapid recovery as a novel reaction of the gut epithelium to toxin or xenobiotics exposure** - Kwang-Zin Lee<sup>1</sup>, Matthieu Lestrade<sup>1</sup>, Catherine Socha<sup>1</sup>, Stefanie Schirmeier<sup>1</sup>, Antonin Schmitz<sup>2</sup>, Caroline Spenle<sup>3</sup>, Olivier Lefebvre<sup>3</sup>, Céline Keime<sup>4</sup>, Samuel Liegeois<sup>1</sup>, Miriam Yamba<sup>1</sup>, Richard Bou Aoun<sup>1</sup>, Yannick Schwab<sup>4</sup>, Frédéric Dalle<sup>2</sup>, Patricia Simon-Assmann<sup>3</sup>, Dominique Ferrandon<sup>1,5</sup>; <sup>1</sup>Equipe Fondation Recherche Medicale, CNRS – Strasbourg, France; <sup>2</sup>UMR 1342 University of Burgundy, Dijon, France; <sup>3</sup>MN3T, FMST, LABEX Medalis University of Strasbourg U1109 INSERM, France; <sup>4</sup>CNRS INSERM Univ. of Strasbourg, IGBMC, France; <sup>5</sup>Institut de Biologie Moléculaire et Cellulaire, CNRS, Strasbourg, France
- 15:00 **221** **Biomphalysin, a novel family of snail immune effectors with common features with bacterial pore-forming toxins** - Silvain Pinaud, Guillaume Tetreau, Anaïs Portet, Richard Galinier, Cristian Chaparro, Benjamin Gourbal, David Duval; Host-Pathogen-Environment Interactions Laboratory, CNRS UMR5244, Université de Perpignan Via Domitia, Université de Montpellier, Institut Français de Recherche pour l'Exploitation de la Mer, OMS/WHO, Perpignan, France
- 15:15 **222** **Toxicological and protein characterization of *Bacillus sphaericus* C3-41 strain from Karnataka, India** - Basavaraj Kalmath<sup>1</sup>, Gajanan Katkar<sup>2</sup>, Aralimarad Prabhuraj<sup>1</sup>, Patil Basavaraj<sup>1</sup>; <sup>1</sup>College of Agriculture, University of Agricultural Science, Raichur, Karnataka, India; <sup>2</sup>Department of Biochemistry, Mysore University, Karnataka, India

CONTRIBUTED PAPERS

14:00-16:00 - *Descartes*

### Virus 7

*Madoka Nakai & Gary Blissard*

- 14:00 **223** **Comparative genomics of parasitoid wasps and what it tells on the evolution of symbiotic viruses** - Jérémy Gauthier<sup>1</sup>, Annie Bézier<sup>1</sup>, Jean-Marc Aury<sup>2</sup>, Valérie Barbe<sup>2</sup>, Anthony Bretaudeau<sup>3</sup>, Fabrice Legeai<sup>3</sup>, Karine Musset<sup>1</sup>, Diane Bigot<sup>1</sup>, Thibaut Josse<sup>1</sup>, Sébastien Moreau<sup>1</sup>, Philippe Gayral<sup>1</sup>, Elisabeth Huguet<sup>1</sup>, Elisabeth Herniou<sup>1</sup>, Jean-Michel Drezen<sup>1</sup>; <sup>1</sup>Institut de recherche sur la Biologie de l'Insecte, CNRS UMR 7261, Université François-Rabelais, Tours, France; <sup>2</sup>Centre national de séquençage CEA, Genoscope, Evry, France; <sup>3</sup>Institut de Génétique, Environnement et Protection des Plantes, INRA UMR1349, Rennes, France
- 14:15 **224** **Permissiveness of lepidopteran hosts is linked to differential expression of bracovirus genes** - Kavita Bitra, Gaelen Burke, Michael Strand; <sup>1</sup>University of Georgia, Athens, United States
- 14:30 **225** **Latency-deficient recombinant and mutant *Helicoverpa***

zea nudiviruses that cause enhanced pathology and sterility to their insect hosts - Bruce Webb, Kendra Steele, Angelika Fath-Goodin, Alonna Wright, Brooke Nemeć; University of Kentucky Lexington, United States

- 14:45 **226** The postfusion 3D-structure of the Spodoptera exigua multiple nucleopolyhedrovirus envelope fusion protein F - Qiushi Wang<sup>1</sup>, Ieva Vasiliauskaite<sup>3</sup>, Berend Jan Bosch<sup>2</sup>, Thomas Krey<sup>3</sup>, Peter Rottier<sup>2</sup>, Just M. Vlak<sup>1</sup>, Felix Rey<sup>3</sup>; <sup>1</sup>Laboratory of Virology, Wageningen University, Wageningen, Netherlands; <sup>2</sup>Virology Division, Department of Infectious Disease and Immunology, Faculty of Veterinary Medicine, Utrecht University, Utrecht, Netherlands; <sup>3</sup>Structural Virology Unit, Department of Virology, Institut Pasteur, Paris, France
- 15:00 **227** A new system for studies of viral envelope protein trafficking in insect cells - Jeffrey Hodgson<sup>1</sup>, Nicolas Buchon<sup>2</sup>, Gary Blissard<sup>1</sup>; <sup>1</sup>Boyce Thompson Institute at Cornell University, Ithaca, NY, United States; <sup>2</sup>Department of Entomology Cornell University, Ithaca, NY, United States
- 15:15 **228** Rescue of the entry of AcMNPV fusion-defective mutants by low-pH triggering: higher fusion activity is required for GP64-mediated entry into mammalian cells compared to insect cells? - Hu Liangbo, Li Yimeng, Ning Yunjia, Deng Fei, Hu Zhihong, Wang Manli, Wang Hualin; State Key Laboratory of Virology, Wuhan Institute of Virology, Chinese Academy of Sciences, Wuhan, China
- 15:30 **229** Extra genomic DNA elements found in an entomopoxvirus - Shusuke Koike<sup>1</sup>, Jun Takatsuka<sup>2</sup>, Julien Thézé<sup>3</sup>, Elisabeth Herniou<sup>4</sup>, Madoka Nakai<sup>1</sup>; <sup>1</sup>Tokyo University of Agriculture and Technology, Fuchu-shi, Tokyo, Japan; <sup>2</sup>Forestry and Forest Products Research Institute, Tsukuba, Japan; <sup>3</sup>University of Oxford, Department of Zoology, Oxford, United Kingdom; <sup>4</sup>Institut de recherche sur la biologie de l'insecte, CNRS UMR7261, Université François Rabelais, Tours, France

CONTRIBUTED PAPERS 14:00-16:00 - Vouvray

### Microbial Control 6

Mike Brownbridge

- 14:00 **230** Entomopathogenic fungi for managing exotic and endemic pests in vegetable crops in California - Surendra Dara; University of California Cooperative Extension, United States
- 14:15 **231** Experimental devices treated with *Metarhizium brunneum* and its extract for spotted-wing drosophila *Drosophila suzukii* Matsumura (Diptera: Drosophilidae) control - Meelad Yousef, Enrique Aranda-Valera, Inmaculada Garrido-Jurado, Enrique Quesada-Moraga; University of Córdoba, Córdoba, Spain
- 14:30 **232** Optimization of a coating process for the development of *Metarhizium*-formulations for control of soil dwelling pests - Dietrich Stephan<sup>1</sup>, Nicolas Maguire<sup>2</sup>; <sup>1</sup>Institute for Biological Control, Julius Kühn-Institut, Darmstadt, Germany; <sup>2</sup>Technische Hochschule Mittelhessen, Gießen, Germany
- 14:45 **233** Physiological mechanisms of synergy between pyrethroid insecticide and entomopathogenic fungus *Metarhizium robertsii* on nontarget aquatic model species *Daphnia magna* - Yury Noskov<sup>1</sup>, Olga Yaroslavtseva<sup>2</sup>, Ecatherine Chertkova<sup>2</sup>, Vadim Kryukov<sup>2</sup>, Ivan Dubovskiy<sup>2</sup>; <sup>1</sup>National Research Tomsk State University, Tomsk, Russia; <sup>2</sup>Institute of Systematics and Ecology of Animals, Siberian Branch of Russian Academie of Sciences, Novosibirsk, Russia
- 15:00 **234** Virulence of wild and transformed strains of *Metarhizium anisopliae* ICPE30 against *Rhipicephalus appendiculatus* and *Amblyomma variegatum* ticks - Nana Paulin<sup>1,2</sup>, Khamis Fathiya<sup>1</sup>, Ekesi Sunday<sup>1</sup>, Subramanian Sevgan<sup>1</sup>, Ombura Levi<sup>1</sup>, Maniania Nguya<sup>1</sup>; <sup>1</sup>International Centre of Insect Physiology and Ecology, Nairobi, Kenya; <sup>2</sup>Universite de Dschang, Dschang, Cameroon
- 15:15 **235** Field evaluation of the entomopathogenic fungus *Metarhizium anisopliae* for the control of cotton aphid *Aphis gossypii* on okra crop - Wakuma Bayissa<sup>1</sup>, Ekesi Sunday<sup>2</sup>, Samira Mohamed<sup>2</sup>, Nguya Maniania<sup>2</sup>; <sup>1</sup>Jimma University College of Agriculture and Veterinary Medicine, Jimma,

Ethiopia; <sup>2</sup>ICIPE, Nairobi, Kenya

- 15:30 **236-STU** Non-target effects of *Metarhizium brunneum* on microbial communities assessed in pot and field trials to control *Agriotes* spp - Johanna Mayerhofer<sup>1</sup>, Sonja Eckard<sup>1</sup>, Martin Hartmann<sup>2</sup>, Giselher Grabenweger<sup>1</sup>, Adrian Leuchtman<sup>3</sup>, Franco Widmer<sup>1</sup>, Jürg Enkerli<sup>1</sup>; <sup>1</sup>Institute for Sustainability Sciences Agroscope, Zurich, Switzerland; <sup>2</sup>Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Birmensdorf, Switzerland; <sup>3</sup>Plant Ecological Genetics, ETH Zurich, Switzerland
- 15:45 **237** Aprehend™ for bed bug control – the biological advantage - Nina Jenkins, Giovanni Bellicanta, Alexis Barbarin, Matthew Thomas; Penn State Department of Entomology, United States

16:00 - 16:30 - Bourgueil

### Student Business Meeting

18:00 - 01:00

### BANQUET Grange de Meslay

18:00  
until 1am

Bus departure

Outside Vinci

Entertainment by Lebel Orchestre

## POSTERS

Poster Session – Wednesday 10:30-13:00

10:30-13:00

Agnès Sorel

### Bacteria Division

- BA-1** A novel protein active from a *Pseudomonas* strain with unique mode of action against western corn rootworm, *Diabrotica virgifera virgifera* (LeConte) - Nuria Jiménez-Juárez, DuPont Pioneer, USA
- BA-2** Alkaline phosphatases are involved in the response of mosquito larvae to intoxication with Bti Cry toxins - Guillaume TETREAU, CNRS-IFREMER: UMR5244, Université de Perpignan Université de Montpellier, OMS/WHO, Perpignan, France
- BA-3-STU** Aquaporins contribute to water influx into Sf9 cells intoxicated by *Bacillus thuringiensis* Cry toxin - Haruka Endo, Tokyo University of Agriculture and Technology, Research Fellow of Japan Society for the Promotion of Science, Japan
- BA-4** Association of cry genes from *Bacillus thuringiensis* with mortality in *Spodoptera frugiperda* - Newton Carneiro, Embrapa Maize and Sorghum
- BA-5-STU** Biological Control of *Hypsipyla Grandella* Zeller (Lepidoptera: Pyralidae) With The Systemic Use Of *Bacillus Thuringiensis* Berliner On Mahogany Seedlings (*Swietenia macrophylla* King) - Marcelo Castro, Universidade de Brasília, Brazil
- BA-6** Biomphalysin, a bacterial  $\beta$ -PFT family in the schistosomiasis vector snail, *Biomphalaria glabrata* - Silvain PINAUD, CNRS-IFREMER: UMR5244, Université de Perpignan Université de Montpellier, OMS/WHO, Perpignan, France
- BA-7** Cadherins are Cry5B Toxin Receptor in *Caenorhabditis elegans* and Play a Sequential Role with the Glycolipid Receptor - Ming Sun, Huazhong Agricultural University, China
- BA-8** Characteristics of an entomopathogenic bacterium, *Xenorhabdus hominickii* ANU1 and its pathogenicity against two lepidopteran pests - Youngjin Park, Department of Bioresource Sciences, Andong National University, South Korea
- BA-9** Characterization of a *Wolbachia* strain native from Argentina for potential application as mosquito control agent - Corina Berón, Instituto de Investigaciones en Biodiversidad y Biotecnología, Fundación para Investigaciones Biológicas Aplicadas, Argentina
- BA-10-STU** Cancelled
- BA-11-STU** Dam overexpression impacts motility and virulence of the entomopathogenic bacteria, *Photorhabdus luminescens* TT01 - Amaury Payelleville, DGIMI, Montpellier, France
- BA-12-STU** Detection and characterization of Parasporin proteins in *Bacillus thuringiensis* - Elias, Ferreira Sabia Jr, Embrapa, Brasil
- BA-13-STU** Dual action of *Bacillus thuringiensis* in the vegetative development of cotton (*Gossypium hirsutum* L.) and the control of *Spodoptera frugiperda* (Lepidoptera: Noctuidae) - Flávia Costa, Universidade de Brasília, Brazil
- BA-14** Evidences for cross-order activity of binary Vip proteins - Baltasar Escriche, Estructura de Recerca Interdisciplinar en Biotecnologia i Biomedicina, Departamento de Genética, Universitat de València, Spain
- BA-15-STU** Evolution of *Photorhabdus* Virulence Cassettes - Joseph Healey, Warwick University Medical School, UK
- BA-16** Genomic and phenotypic analysis of *Bacillus thuringiensis* cry- exposed for in vivo experimental evolution in *Galleria mellonella* - Christina Nielsen-Leroux, Micalis, France
- BA-17-STU** Mechanisms involved in the acquisition of host iron ferritin by the opportunistic insect pathogen *Bacillus cereus* - Laurent Consentino, MICALIS équipe Génétique Microbienne et Environnement, France
- BA-18** Mosquitocidal activity of non-3-domain Cry type 33-kDa protein from *Bacillus thuringiensis* isolated in Japan - So Takebe, Faculty of Biology-Oriented Science and Technology, Kindai University, Japan

**BA-19** Multifaceted aspects of insect pathogenic and commensal bacteria in insect based food and feed – Christina Nielsen Leroux, INRA Micalis France

**BA-20** Cancelled

**BA-21** New entomopathogenic bacterial strains from *Galleria mellonella* larvae infected with EPNs - Luca Ruiu, Biocepest Srl, Department of Agriculture, University of Sassari, Italy

**BA-22** Preparation and formulation optimization of a mosquitocidal sustained-release *Bacillus thuringiensis* with high UV-resistance - Lingling Zhang, Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, Fujian Agriculture and Forestry University, China

**BA-23-STU** Resistance of different *Spodoptera frugiperda* populations to Bt-maize from the Bahia and Goiás states correlates with low alkaline phosphatase expression - Cristina Macedo, Universidade de Brasília, Brazil

**BA-24** Spent Juncao substrate can be converted into fermentable sugar with one-step method - Yueting Xiong, Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, Fujian Agriculture and Forestry University, China

**BA-25** Structural analysis of mosquitocidal toxin sequences from a *Bacillus thuringiensis* native strain - Corina Berón, Instituto de Investigaciones en Biodiversidad y Biotecnología, Fundación para Investigaciones Biológicas Aplicadas, Argentina

**BA-26** Study of *Bacillus thuringiensis* Cry toxin binding sites in the two important soya pests *Anticarsia gemmatilis* and *Chrysodeixis includens* - Yolanda Bel, Departamento de Genética, Universitat de València, ERI de Biotecnología y Biomedicina, Universitat de València, Spain

**BA-27** Synergism of Cry1Ac and Cry1Ie toxins and its potential for resistance management - Kanglai He, IPPCAAS, China

**BA-28** Temperature restriction in *Photorhabdus luminescens* - Alexia Hapeshi, Warwick University Medical School, UK

**BA-29-STU** Use of *Caenorhabditis elegans* as model for selection of *Bacillus spp.* toxic strains to *Meloidogyne incognita* race 3 - Sandro Montalvão, Universidade de Brasília, Brazil

**BA-30** Vip3Aa laboratory selection and characterization of resistance in *Heliothis virescens* (Lepidoptera: Noctuidae) - Juan Ferré, ERI de Biotecnología y Biomedicina, Universitat de València, Spain

10:30-13:00

Agnès Sorel

### Diseases of Beneficial Invertebrates Division

Posters of the Diseases of Beneficial Invertebrates Division

**DBI-1-STU** A New Phylogeny and eDNA Insight into Paramyxids: an Increasingly Important but Enigmatic Clade of Protistan Parasites of Marine Invertebrates - Georgia Ward, Natural History Museum, Centre for Environment, Fisheries and Aquaculture Science, University of Exeter, UK

**DBI-2** A new simple and universal method for interactomic Studies - Guillaume TETREAU, CNRS-IFREMER: UMR5244, Université de Perpignan Université de Montpellier, OMS/WHO, Perpignan, France

**DBI-3** Histopathologic Survey Of Newfoundland Snow Crab, *Chionoecetes Opilio*, With Evaluation Of The Association Of Bitter Crab Disease With Histologic Patterns Of Inflammation - Melanie Buote, Atlantic Veterinary College, Canada

**DBI-4** Honey bee immunity: Its modulation by dietary supplements and probiotics - Pavel Dobes, Masaryk University, Czech Republic

**DBI-5-STU** Identification of *Serratia marcescens* infection in industrial rearing of *Tenebrio molitor* - Zoé Tourrain, INRA- Micalis, France

**DBI-6-STU** Identification of the honeybee parasitic mite *Varroa destructor* resistance using discrimination concentrations of acaricides in vitro - Doslak Ivo, Department of Microbiology, Nutrition and Dietetics, Czech University of Life Sciences, Czech Republic

**DBI-7-STU** Occurrence of Gammaproteobacteria in honey bee gut infected by *Paenibacillus* larvae - Zuzana Hroncova, Czech University of Life Sciences Prague, Czech Republic

- DBI-8 Ontogeny of the immune system in harlequin ladybird, *Harmonia axyridis*** - Pavel Dobes, Masaryk University, Brno, Czech Republic
- DBI-9-STU Pathogens of *Carcinus maenas* in their invasive range** - Jamie Bojko, Cefas, UK
- DBI-10-STU Ultrastructural analysis of antennal gland in American lobster experimentally infected with White Spot Syndrome Virus** - Louise-Marie Roux, Atlantic Veterinary College, University of Prince Edward Island, Canada

10:30-13:00

Agnès Sorel

### Fungi Division

- FU-1 A new species of *Moelleriella* (Clavicipitaceae, Ascomycota) based on morphological and molecular data from China** - Xiuyan Wei, Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, College of Life Sciences, Fujian Agriculture and Forestry University, China
- FU-2 A new xanthone derivative from a new isolate of the entomopathogenic fungus *Moelleriella* sp.** - Xiangyun Zang, Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, College of Life Sciences, Fujian Agriculture and Forestry University, China
- FU-3-STU *Beauveria bassiana* inhibits propagation of *Anopheles stephensi* on all stages** - Minehiro Ishii, The United Graduate School of Agricultural Sciences, Iwate University, Japan, Research Fellowship for Young Scientists, Japan Society for the Promotion of Science, Department of Agro-environmental Science, Obihiro University of Agriculture & Veterinary Medicine, Japan
- FU-4 Characterization of an  $\alpha$ -amylase from the honey bee chalk brood pathogen *Ascosphaera apis*** - Lindan Yao, Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, College of Life Sciences, Fujian Agriculture and Forestry University, China
- FU-5 Characterization of the pathogenicity of commercial or precommercial *Beauveria* sp. strains against the melon fly *Bactrocera cucurbitae*** - Laurent Costet, CIRAD, Réunion, France
- FU-6 Does *Agriotes obscurus* avoid the fungal entomopathogen, *Metarhizium brunneum*?** - Alida Janmaat, University of the Fraser Valley, Canada
- FU-7 Effect of temperature on germination, radial growth and spore production of different isolates of *Beauveria bassiana*** - Medea Burjanadze, Agricultural University of Georgia, Georgia
- FU-8-STU Effects of *Metarhizium anisopliae* (Hypocreales: Clavicipitaceae) on the food consumption and mortality of Mexican fruit fly, *Anastrepha ludens* (Diptera: Tephritidae)** - Ricardo Toledo Hernández, El Colegio de la Frontera Sur
- FU-9 Efficient production of *Aschersonia placenta* protoplasts for transformation using optimization algorithms** - Zijian Gu, Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, College of Life Sciences, Fujian Agriculture and Forestry, China
- FU-10-STU Entomopathogenic fungi to control simultaneously both *Myzus persicae* (Green peach aphid) and plant diseases** - In Hui Kim, Department of Agricultural Biology, College of Agriculture, Life & Environment Science, Chungbuk National University, South Korea
- FU-11-STU Evaluation of entomopathogenic fungi as the dual control agents against both *Tetranychus urticae* (Two-spotted spider mite) and plant pathogens** - Dong Jun Kim, Department of Agricultural Biology, College of Agriculture, Life & Environment Science, Chungbuk National University, South Korea
- FU-12 Genetic diversity of *Metarhizium* spp. in grass, wheat, and forest habitats** - Juerg Enkerli, Institute for Sustainability Sciences Agroscope, Switzerland
- FU-13 Genetic structure of *Beauveria bassiana* in different habitats of a holm oak tree** - Maria Fernandez-Bravo, University of Córdoba, Spain
- FU-14 Isolation and characterization of entomopathogenic fungi from *Pristiphora abietina* Christ. (Hymenoptera: Tenthredinidae)** - Ismail Demir, Technical University, Trabzon, Turkey
- FU-15 Laboratory And Field Bioassays With *Beauveria Bassiana* And *Metharizium Anisopliae* Against Bark Beetles** - Daniela

Pilarska, New Bulgarian University, Bulgarian Academy of Sciences, Bulgaria

**FU-16-STU Mealworm beetle - *Tenebrio Molitor* L as one of the best insect for isolation entomopathogenic fungi from soil** - Ketevan Koridze, Agricultural University of Georgia, Georgia

**FU-17 *Moelleriella fujianensis* sp. nov. (Clavicipitaceae, Ascomycota) from southeast China** - Lili Dong, Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, College of Life Sciences, Fujian Agriculture and Forestry University, China

**FU-18 Molecular characterization of indigenous *Beauveria bassiana* associated with coffee berry borers in Hawaii and assessments of their epizootic potential** - Louela Castrillo, Cornell University, USA

**FU-19 Natural occurrence of wireworms (Coleoptera: Elateridae) and entomopathogenic fungi in sunflower fields of Spain, and evaluation of their pathogenicity toward wireworms** - Enrique Quesada Moraga, University of Cordoba, Spain

**FU-20 Production of blastospores by Brazilian strains of four entomopathogenic fungi using submerged liquid culture fermentation** - Vanessa Duarte, University of São Paulo, Brazil

**FU-21 Secreted lipase as a molecular marker for *Beauveria bassiana*** - Georgy Lednev, All-Russian Institute of Plant Protection, Russia

**FU-21 Self-Defense: Insect pupal cells with antibiotic properties** - David Shapiro-Ilan, USDA-ARS, USA

**FU-23 The complete genome of *Metarhizium rileyi*, a key fungal pathogen of Lepidoptera** - Daniel Sosa-Gomez, Brazilian Agricultural Research Corporation, Brazilian Agriculture Research Corporation

**FU-24 Tradeoffs of immune system function with longevity as mediated by diet** - Parvin Shahrestani, California State University, Fullerton

**FU-25-STU Update of knowledge about *Leptolegnia chapmanii* as an agent of biological control of mosquito *Aedes aegypti*** - Claudia Lopez Lastra, Centro de estudios parasitológicos y de vectores, Argentina

**FU-26 Virulence of selected entomopathogenic fungi against the olive fruit fly and their potential for biocontrol** - Melanie Tannieres, European Biological Control Laboratory, France

10:30-13:00

Agnès Sorel

### Microbial Control Division

**MC-1-STU A potential of biofilm formation by *Bacillus thuringiensis* on plant root surface** - Jiaheling Qi, The United Graduate School of Agricultural Sciences, Iwate University, Japan

**MC-2 Aphicidal potential and virulence of *Lecanicillium* fungi from Argentina** - Romina Manfrino, Centro de Estudios Parasitológicos y de Vectores, Argentina

**MC-3 Biofilm fermentation for the production of insect pathogenic fungi** - Thomas Bawin, Functional and Evolutionary Entomology, Gembloux Agro-Bio Tech, University of Liege, Belgium

**MC-4 Biological control of *Tuta absoluta* (Meyrick) (Lep: Gelechiidae) by the use of entomopathogenic fungi** - Fatma Acheuk, Université de Boumerdes, Algeria

**MC-5 BioZec - Development of a biological tick control agent based on an innovative attract-and-kill strategy** - Anant Patel, Bielefeld University of Applied Sciences, Germany

**MC-6-STU Detection of natural antagonists in *Drosophila suzukii* – a chance for biological control of the invasive insect pest?** - Sarah Biganski, Julius Kühn-Institut, , Institute for Biological Control, Germany

**MC-7 Development of an Efficacious, Practical, UV Protectant Formulation for Entomopathogenic Fungi** - Stefan Jaronski, USDA-ARS, USA

**MC-8-STU Development of nanoencapsulated, particle-based bait prepared with bioactive and biocompatible entomopathogenic agents for the control of leaf-cutting ants (*Atta* and *Acromyrmex* sp.) and its cultivated fungi (*Leucoagaricus gongylophorus*) as an eco-friendly alternative for sustainable agriculture.** - Esteve A. Mesén-Porras, Centro de Investigación en Biología Celular y Molecular, Costa Rica

**MC-9** Identification of new *Bacillus thuringiensis* (Berliner) isolates as biological control agents against *Ostrinia nubilalis* (Hübner) larvae - Isabel Matas Casado, Instituto de Agrobiotecnología CSIC-UPNA, Spain

**MC-10** Impacts of entomopathogenic fungi on biology and behaviour of the invasive Brown Marmorated Stink Bug (Hemiptera, Pentatomidae) - Thomas Bawin, Functional and Evolutionary Entomology, Gembloux Agro-Bio Tech, University of Liege, Belgium

**MC-11** Interaction of commercial products based on *Bacillus thuringiensis* and *Cotesia flavipes* (Hymenoptera: Braconidae) to the control of *Diatraea saccharalis* (Lepidoptera: Crambidae) - Caroline De Bortoli, Sao Paulo State University, Brazil

**MC-12** Isolation and characterization of *Bacillus thuringiensis* strain from *Podisus nigrispinus* (Hemiptera: Pentatomidae) - Caroline De Bortoli, Sao Paulo State University, Brazil

**MC-13** Isolation and identification of a *Serratia marcescens* protease with toxic activity against larvae of *Phyllophaga blanchardi* (Coleoptera: Scarabaeidae) - María Eugenia Nuñez-Valdez, Instituto de Investigación en Ciencias Básicas y Aplicadas, Universidad Autónoma del Estado de Morelos, Mexico

**MC-14-STU** Molecular identification and biological activity of African isolates of PhopGV on *Tuta absoluta* larvae - Saoussen Ben Tiba, Regional Center for Agriculture, Chott Meriem, Tunisia

**MC-15** The use of auto-contamination-dissemination strategy for emerald ash borer (*Agilus planipennis*) population management and development of a molecular tool for tracking the released native *Beauveria bassiana* (Bb) isolate - George Kyei-Poku, Great Lakes Forestry Centre, Sault Ste Marie, Canada

**MC-16** Using an Antarctic fungus as a wintertime biopesticide - Steven Edgington, CAB, UK

**MC-17-STU** Virulence of vegetative insecticidal proteins Vip3Aa60 and Vip3Ad5 of *Bacillus thuringiensis* against *Spodoptera exigua* (Lepidoptera). - Zhizhen Pan, Key Laboratory of Biopesticide and Chemical Biology, Fujian Agriculture and Forestry University, Ministry of Education, Fuzhou, China

10:30-13:00

Agnès Sorel

### Microsporidia Division

**MI-1** Experimental infection of *Loxostege sticticalis* (Lepidoptera: Pyraloidea) with microsporidia - Julia Malysh, All-Russian Institute of Plant Protection, Russia

**MI-2** Horizontal transmission of the microsporidium *Nosema adaliae*, from the two-spotted lady beetle, *Adalia bipunctata*, to the green lacewing, *Chrysoperla carnea* - Susan Bjornson, Department of Biology, Saint Mary's University, Canada

**MI-3-STU** The anti-*Nosema* active substances from entomopathogenic fungal cultures - See Nae Lee, Department of Agricultural Biology, College of Agriculture, Life & Environment Science, Chungbuk National University, South Korea

**MI-4-STU** The effects of RNAi to microsporidian parasites *Nosema ceranae* in the honeybee - Won Seok Gwak, Department of Agricultural Biology, College of Agriculture, Life & Environment Science, Chungbuk National University, South Korea

**MI-5** The Proboscis Extension Response as a behavioral tool for assessing the vectorial competence along the life cycle of *R. prolixus* (Hemiptera: Reduviidae) - Nadine FRESQUET, Institut de Recherche sur la Biologie de l'Insecte, UMR CNRS 7261, France

10:30-13:00

Agnès Sorel

### Nematode Division

**NE-1-STU** An entomopathogenic nematode extends its niche by associating with different symbionts - Mohamed Asayah, Maynooth University, Ireland

**NE-2** Biological control of large pine weevil with entomopathogenic nematodes: on the way to large scale application - Julien Chuche, Maynooth University, Ireland

**NE-3** Concurrent Transcriptional Profiling Of *Dirofilaria immitis* And Its Wolbachia Endosymbiont Throughout The Nematode Life Cycle Reveals Coordinated Gene Expression - Barton Slatko, New England Biolabs, USA

**NE-4** Evaluation of different entomopathogenic nematode application methods in the presence and absence of the natural enemy *Sancassania polyphylla* - Canan Hazir, Adnan Menderes University, Turkey

**NE-5** FIM Track: a novel method for tracking of *Drosophila* larval behavior in response to entomopathogenic nematodes - Martin Kunc, Institute of Experimental Biology, Faculty of Science, Masaryk University, Czech Republic

**NE-6** Heme Acquisition in the Human Parasitic Filarial Nematode, *Brugia malayi* - Barton Slatko, New England Biolabs, USA

**NE-7** Historical review of entomopathogenic nematode research in Korea - Dong Woon Lee, Kyungpook National University

**NE-8** *In vivo* efficacy of *Heterorhabditis bacteriophora* on *Cephalcia tannourinensis*, pest of the Cedar natural forests of Lebanon - Martine Rehayem, Université de Montpellier, France

**NE-9** Molecular Diagnostics of Human Nematode and Protozoan Gastrointestinal Parasites in Rural Argentina, with Impact on Intestinal Microbiota - Barton Slatko, New England Biolabs, USA

**NE-10** Optimizing the efficacy of entomopathogenic nematodes for the control of annual bluegrass weevil, *Listronotus maculicollis*, larvae - Albrecht Koppenhöfer, Department of Entomology, Rutgers University, USA

**NE-11-STU** Pheromone mediated attraction and maturation in *Steinernema* adults - Cathryn Hartley, Maynooth University, Ireland

**NE-12** RNAi-mediated gene silencing of candidate drug targets in the filarial nematode *Brugia malayi* - Silvia Libro, New England Biolabs, USA

**NE-13** Selective DNA Enrichment, High Quality Library Construction and Quantitation For Robust NextGeneration Sequencing - Barton Slatko, New England Biolabs, USA

**NE-14-STU** Soil as a Habitation of Biological Control Agents for Pest Management - Mariam Chubinishvili, Agricultural University of Georgia, Georgia

**NE-15** *Steinernema beitlechemi* n. sp. (Rhabditida: Steinernematidae), a new entomopathogenic nematode from Bethlehem, South Africa - Selcuk Hazir, Adnan Menderes University, Turkey

**NE-16** Survival time and infectivity of entomopathogenic nematodes with or without pre-conditioning formulated in alginate beads - Jaime Ruiz-Vega, Instituto Politecnico Nacional, CIIDIR-Oaxaca, Mexico

**NE-17** Susceptibility of Mealy Plum Aphid, *Hyalopterus Pruni* (Homoptera:Aphididae), to entomopathogenic nematodes *Steinernema carpocapsae* and *Steinernema feltiae* (Rhabditida; Steinernematidae) under laboratory conditions - Nona Mikaia, Sokumi State University, Georgia

**NE-18** Temperature effects on Korean isolated entomopathogenic nematode, *Steinernema kraussei* - Dong Woon Lee, Kyungpook National University, South Korea

10:30-13:00

Agnès Sorel

### Virus Division

**VI-1** A new virus from *Cotesia* parasitoid wasps fills a gap in the arthropod large dsDNA virus phylogeny - Annie Bézier, Institut de Recherche sur la Biologie de l'Insecte, UMR CNRS 7261, France

**VI-2** A Shannon entropy-based method to predict the localization of transmembrane proteins (BV or ODV envelopes) in the *Baculoviridae* family - Mariano Belaich, Universidad Nacional de Quilmes, Argentina

**VI-3** Adaptation of a Colombian *Spodoptera frugiperda* nucleopolyhedrovirus isolate to alternative host *Heliothis virescens* - Gloria Barrera, Corporación Colombiana de Investigación Agropecuaria, Columbia

**VI-4** Analysis of protein expression from the baculovirus AcMNPV in the cell line BTI-TN-5B1-4 at different post-infection times - Cristina Del Rincón-Castro, University of Guanajuato, Mexico



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