Avoidance of entomopathogenic fungi by insect predators
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Incorporating COST862 Action: Bacterial Toxins for Insect Control

PROGRAM and ABSTRACTS

3-7 August 2008
University of Warwick,
Coventry, UK
F-24 Avoidance of entomopathogenic fungi by insect predators
Nicolai V. Meyling 1, Emma Ormond 2, Helen E. Roy 3, Judith K. Pell 4, University of Copenhagen, Denmark; 5Anglia Ruskin University, Cambridge, UK; 6NERC Centre for Ecology and Hydrology, Cambridgeshire, UK; 7Rothamsted Research, Plant and Invertebrate Ecology Department, Harpenden, Hertfordshire, UK

F-25 Isolation of entomopathogenic fungi from soil collected from western United States
Evetton K. K. Fernandes 1, Chad A. Keyser 2, Drouart E. N. Rangel 1, E. Nelson Foster 2, Donald W. Roberts 1, Utah State University, Logan, UT, USA; 3USDA/APHIS/PPQ/CPHST Lab, Phoenix, AZ, USA

F-26 Survey for entomopathogenic fungi from Rhyhchophorous ferrugineus (Oliv.) (Coleoptera, Curculionidae)
Barbara Manaching, Sandra Marineo, Franco Palla, University of Palermo, Italy

F-27 STU Induction of defense-related genes in banana (Musa spp.) by endophytic Fusarium oxysporum
Pamela Paparu 1, Thomas Dubois 2, Daniel Coyne 2, Claire Munro 2, Altus Viljoen 1, University of Pretoria, South Africa; 3International Institute of Tropical Agriculture, Kampala, Uganda; 4University of Stellenbosch, South Africa

F-28 STU Observations of fungal disease in the giant willow aphid (Tuberolachnus salignus): Is it a new species of Neocyphellastroma? Gauthier Acadort 1, Richard Harrington 2, Angela Karp 3, Steve Hanley 2, Ian Shield 2, William Macalpine 1, Matilda Collins 1, Simon Leather 2, Judith Pell 2, Rothamsted Research, Harpenden, Hertfordshire, UK; 3Imperial College London, Ascot, UK

12:30–14:00 LUNCH Rootes Restaurant

13:30-18:30 EXCURSION
19:00-23:00 BBQ including presentation of 5K awards and Auction

WEDNESDAY - 6 August

Symposium (Bacteria Division) Wednes., 8:00–10:00. Arts C. Theatre
Entomopathogenic Bacteria Other than Bacillus
Organizers/Moderators: Christina Nielsen-LeRoux and Juan-Luis Jurat-Fuentes.

8:00 90 Drosophila host defence against Pseudomonas entomophaga
Onya Onoto 1, Bruno Lemaire 1, E cole Polytechnique Federale de Lausanne, Switzerland

8:30 91 Virulence determinants of Yersinia entomophaga MH96: a genomic perspective.
Mark R H Hurst 1, Regina Shaw 2, William G. Farmerie 1, Anette Becher 3, AgResearch, Bioprocessing and Biosecurity, Canterbury, New Zealand; 4University of Florida, Gainesville, FL, USA; 5AgResearch, Invermay, New Zealand

9:00 92 Insecticidal toxins from Photorhabdus: Comparative genomics and Rapid Virulence Annotation (RVA) Richard H. H. French-Constant 1, Stewart Hinchliffe 1, Michelle Hares 1, Andrea J. Dowling 1, Nicholas Waterfield 1, Isabella Vlassoud 1, Maria Sanchez Contreras 1, University of Exeter in Cornwall, Penryn, UK; 2University of Bath, UK

9:30 93 Pathogenesis of Serratia entomophila (Enterobacteriaceae) towards the New Zealand grass grub Costelytra zealandica.
Davor A. Jackson 1, Sean M. Marshall 1, Mark R.H. Hurst 1, Drion G. Boucias 1, Heather S. Gatehouse 2, John C. Christeller 2, AgResearch, Canterbury, New Zealand; 3University of Florida, Gainesville, USA; 4Horticulture and Food Research Institute, New Zealand

8:00 94 Microsporidian parasite of caddis flies (Trichoptera) with comment to phylogeny and classification of Microsporidia in general
Miroslav Hyšil 1, University of Prague, Prague, Czech Republic

8:20 95 Evolutionary interactions between microsporidia and their hosts: Lessons from an ancient lake
Judith E. Smith 1, Qui Yang 1, Ravel M. Kamalatynov 1, Dmitry T. Sherbakov 1, Leeds University, UK; 2Siberian Branch of Russian Academy of Sciences, Irkutsk, Russia

8:40 96 Microsporidia in freshwater Amphipods: an overview and an example Remi A. Wattier 1, Karolina Baccela 2, Thierry Rigaud 2, Universite de Bourgogne, Dijon, Burgundy, France

9:00 97 Coevolutionary dynamics of host-parasite interactions in natural Daphnia populations
Ellen Decaestecker 1, K.U. Leuven - Campus Kortrijk, Belgium

9:20 98 Epizootiological studies of Amblyospora camposi (Microsporidia: Amblyosporidae) in Culex renatoi (Diptera:Culicidae) and Paracyclops fimbriatum fimbriatus (Copepoda:Cyclopidae) in a bromeliad habitat
Victoria Mieli 1, James J. Becnel 2, Gerard A. Marti 1, Maria C. Tranchida 1, Juan J. Garcia 1, Centro de Estudios Parasitologicos y de Vectores- CEPAVE (UNLP-CONICET), Argentina; 2USDA, ARS, Gainesville, FL, USA

9:40 99 Intranuclear microsporidians in crustaceans: The genus Enterospora (Enterobacteriaceae) towards the New Zealand grass grub Costelytra zealandica
Itamar Glazer 1, Michael Samish 2, Andrea B. Carte 2, Weiguo Fang 3, The Volcani Center, Bet Dagan, Israel; 4Charles University, Prague, Czech Republic

8:00 100 Genetic analysis of conidiation mutants in Metarhizium anisopliae derived by Agrobacterium-mediated mutagenesis
Farah-Jade Dryburgh 1, Weiguo Fang 2, Raymond J. St. Leger 2, Brock University, ON, Canada; 3University of Maryland, College Park, Maryland, USA

18:15 101 Directed adaptation of Metarhizium anisopliae to cockroach cuticle
Elades de Crecy 1, Nennat O. Keyhani 2, Evoglate LLC, Gainesville, FL, USA; 3University of Florida, Gainesville, FL, USA

18:30 102 The effect of tick species and stages on the penetration steps of the entomopathogenic fungi, Metarhizium anisopliae
Galina Gindin 1, Dana Ment 1, Asael Rot 1, Ramar Glazer 2, Michael Samish 1, The Volcani Center, Bet Dagan, Israel; 3Kimron Veterinary Institute, Bet Dagan, Israel
Avoidance of entomopathogenic fungi by insect predators

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Abstract

Insects can detect cues related to the risk of attack by their natural enemies; including entomopathogenic fungi. Behavioural mechanisms that enable insects to avoid infection by fungal pathogens would be advantageous adaptations. We conducted experiments to assess the potential of common insect predators to detect and avoid their fungal natural enemy Beauveria bassiana. The predatory bug Anthocoris nemorum avoided nettle leaves treated with B. bassiana, and females laid fewer eggs on leaf halves contaminated with the pathogen. Adult seven spot ladybirds, Coccinella septempunctata, overwinter in the litter layer often in groups. Adult C. septempunctata modified their overwintering behaviour in relation to the presence of B. bassiana conidia in soil and sporulating conspecifics by moving away from sources of infection. Furthermore, active (non-overwintering) adult C. septempunctata detected and avoided B. bassiana conidia on different substrates, including leaves and soil. Our studies show that insect predators have evolved mechanisms to detect and avoid pathogens that they are susceptible to. Fungal pathogens may be significant mortality factors among populations of insect predators, especially long-lived species that must diapause before reproduction. Likewise, actively foraging species are more likely to come in contact with pathogens than predators that sit and wait for prey.