

# Arthropod symbiosis in extreme environments

Brussels, Belgium,  
September 20<sup>th</sup> – 21<sup>st</sup> 2011



COST Action FA0701

Arthropod Symbioses: From fundamental studies to  
pest and diseases management

## ORGANIZING COMMITTEE

**Claudio Bandi**, University of Milan, Italy

**Kostas Bourtzis**, University of Ioannina, Greece

**Ameur Cherif**, University of Tunis, Tunisia

**Domènec Dall'Anchio**, University of Milan, Italy

**at Zchori-Fein**, Neve Ya'ar Research Center, Israel

**a**

## New MC members

### Vectors and zoonoses in Serbia

**Sara Savić**, Zivoslav Grgic, Branka Vidic, Tamas Petrovic, Dragica Stojanovic  
Scientific Veterinary Institute "Novi Sad, Rumenacki put 20, Novi Sad, Serbia

Research on vectors and zoonoses in Serbia has been going on for more than a decade now. Due to the climate changes during the last years, the presence of vectors has changed and also the presence of zoonotic agents inside them has changed, too. Vectors that can be found are ticks, mosquitoes, flies, etc. The study done recently has shown the presence of ticks can be found throughout the whole year and the presence of *I. ricinus* among the tick population is more than 60% in urban and surrounding environment. More than 25% of ticks are infected with *B. burgdorferi sensu lato* in the several regions of different parts of Serbia. Also, seroprevalence in dogs for Lyme borreliosis was found to be 25-28% and there are cases of human borreliosis in the same regions. *Dirofilaria* can be found in dogs and humans, since 4 years ago, and mosquitoes can be found during the warm period of the year (May-October). Both, *Dirofilaria immitis* and *Dirofilaria repens* can be found in dogs as a side finding during dissection, or as a cause of a disease. *Phlebotominae* as vectors are present in Serbia for some time. Since three years ago, several dogs were found with clinical signs and seropositive finding for leishmaniasis. At first, all of the dogs were infected abroad, but since 2010, few dogs were found that have never left Serbia.

### Diversity and role of bacterial endosymbionts in the predator *Macrolophus*

**Thomas Macneil**<sup>1</sup>, Thomas Van Leeuwen<sup>1</sup>, Tom Van De Wiele<sup>2</sup>, Nico Boon<sup>2</sup>, Winnok De Vos<sup>3</sup>, Godelieve Gheysen<sup>4</sup>, Patrick De Clercq<sup>1</sup>

<sup>1</sup>Lab. of Agrozoology, Dept. of Crop Protection, Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium; <sup>2</sup>Lab. of Microbial Ecology and Technology (LabMET), Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium; <sup>3</sup>Lab. of Bio-imaging and Cytometry, Dept. of Molecular Biotechnology, Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium; <sup>4</sup>Lab. of Applied Molecular Genetics, Dept. of Molecular Biotechnology, Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium

Predatory bugs of the genus *Macrolophus* have been widely used in European greenhouses for the biological control of key arthropod pests like whiteflies, spider mites and aphids. We have examined the reproductive effect of the bacterial endosymbiont *Wolbachia* in *M. pygmaeus*. Crossing experiments between cured and infected individuals demonstrated that the endosymbiont causes a strong cytoplasmic incompatibility effect on its host. This incompatibility can lead to a strong population suppression when infected and uninfected strains of *M. pygmaeus* are crossed, and may as such have adverse effects for its commercial mass production and use in biological control. Further, the microbial diversity of various populations of *M. pygmaeus* and the closely related species *M. caliginosus* was examined by denaturing gradient gel electrophoresis (DGGE) and 16S rDNA gene sequencing. In addition to *Wolbachia*, two *Rickettsia* species were detected in all *M. pygmaeus* populations, whereas all studied *M. caliginosus* populations were infected with the same *Wolbachia* strain, but only possessed one *Rickettsia* strain. A PCR assay and a fluorescence in situ hybridization confirmed the presence of *Wolbachia* and *Rickettsia* in the oocytes, indicating vertical transmission. However, the role of the *Rickettsia* species in these predatory bugs is still unknown, as there was no indication that they influence the development and fecundity of the predators.