

P2.43

Proteomic study of plant–aphid interactions: between defence and adaptations

Frédéric Francis^a, Pascal Gerkens^b, Edwin Depauw^b and Eric Haubruge^a, (^aFunctional and Evolutionary Entomology Unit, Gembloux Agricultural University; ^bMass Spectrometry Laboratory; University of Liège)

Chemical ecology is the study of how particular chemicals are involved in interactions of organisms with each other and with their surroundings. In order to reduce insect attack, plants have evolved a variety of defence mechanisms, both constitutive and inducible, while insects have evolved strategies to overcome these plant defences (such as detoxification enzymes). A major determinant of the influence of evolutionary arms races is the strategy of the insect: generalist insect herbivores, such as *Myzus persicae* aphid, need more complex adaptive mechanisms since they need to respond to a large array of different plant-defensive chemicals. Here we studied the chemical ecology of *M. persicae* associated with plant species from Solanaceae family. To identify the involved adaptation systems to cope with the plant secondary substances and to assess the differential expression of these systems, a nonrestrictive proteomic approach was developed to identify all the potential adaptation systems toward the secondary metabolites from host plants. The complex protein mixtures was separated by two-dimensional electrophoresis methods, and the related spots of proteins varying at least with a twofold ratio were selected and identified by mass spectrometry (MALDI TOF) coupled with data bank investigations. These techniques are very reliable to describe the proteome from organisms such as insects, in response to particular host plant defence mechanisms.