

A SALIVARY CHITINASE OF *VARROA DESTRUCTOR* INFLUENCES HONEY BEE IMMUNITY AND MITE'S SURVIVAL

BECCHIMANZI A.*, TATÈ R.** , CAMPBELL E.M.***, CAPRIO E.* , GIGLIOTTI S.****, BOWMAN A.S.***, PENNACCHIO F.*

*) University of Napoli "Federico II" - Department of Agricultural Sciences, Naples (Italy)

**) Institute of Genetics and Biophysics "Adriano Buzzati Traverso"- CNR, Naples (Italy)

***) University of Aberdeen - School of Biological Sciences (Zoology), Aberdeen (Scotland)

****) Institute of Biosciences and Bioresources – CNR, Naples (Italy)

Varroa destructor creates a wound in the host's cuticle through which it feeds on haemolymph and fat body, representing an important stress factor that weakens honeybee colonies and promotes the spreading of diseases. In order to facilitate feeding, this ectoparasitic mite delivers a complex of factors with its salivary secretions. The characterization of these factors is still largely elusive and any progress in this area will offer new insights into the molecular basis of *Varroa*-honeybee interactions, on which to develop new sustainable strategies of mite control. Here, we have used a functional genomics pipeline to identify *V. destructor* salivary proteins putatively involved in the regulation of host physiology, and their expression in salivary glands has been assessed by qRT-PCR and *in situ* hybridization. This approach allowed the identification of a salivary chitinase, which was subsequently studied from a functional point of view. *In vivo* studies were based on gene knockdown followed by artificial infestation of honeybee pupae. The effectiveness and the time course of the silencing were assessed and associated with the observed level of mortality on experimental *Varroa* mites. To study the effect of the salivary chitinase of *V. destructor* on honeybee gene expression, we analyzed the transcriptome of worker pupae in response to parasitism by silenced mites. The results obtained indicate an important role of this enzyme in the modulation of host immune response.