



Università degli Studi di Napoli Federico II

PhD in Biotechnology - 35th cycle

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RNAi-mediated immunosuppression for the development of new insect control technologies

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Insects combat their natural antagonists using multiple innate defence reactions. Physical barriers protecting the body cavity are complemented by both local and systemic immune responses. However, when external intruders overcome this barrier and enter the haemocoel, a complex array of humoral and cellular defence reactions is activated. Nevertheless, insect pathogens and parasitoids are able to successfully overcome these immune barriers by using virulence factors, which can be both directly and indirectly used as a basis to develop new bioinspired strategies of pest control. Their direct use as a bioinsecticide molecules can be complemented by indirect strategies based on the knowledge of their mechanism of action. Indeed, the molecular targets of virulence factors and the downstream pathways can be modulated and/or disrupted using molecular technologies such as RNAi. In this project I will focus on the study of the immune barriers of *Spodoptera littoralis*, an important pest insect of several crops, in order to develop control strategies based on the use of RNAi for silencing immune genes that allow to enhance the susceptibility of this pest to natural antagonists.