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Titolo	THE MICROBIOTA ASSOCIATED WITH THE INVASIVE POPILLIA JAPONICA (COLEOPTERA: SCARABAEIDAE) AND EVALUATION OF ENTOMOPATHOGENIC ACTIVITY OF THE ISOLATED NEMATODES [Tesi di dottorato]
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Sommario	<p>Popillia japonica Newman (Coleoptera: Scarabaeidae) is a highly polyphagous invasive beetle originating from Japan. It attacks more than 300 plant species, causing severe damage, and can adapt rapidly to new environments. Recently, several studies have been carried out in order to study insect-associated microorganisms and their impact on insect physiology. These microbiota-based studies have also investigated the impact of symbionts on their host's potential to adapt to changing conditions, thus contributing to an insect's invasive potential. However, to date, no study has been reported regarding the microbial community associated with P. japonica and the factors that may influence the composition of these communities. Therefore, our group decided to investigate the bacterial community associated with P. japonica at different developmental stages (i.e., larvae, pupae and adults (male, female) using NGS approaches. The aim of this thesis is to investigate the microbiota associated with the three gut regions of different developmental stages of P. japonica (i.e., larvae, pupae and adults) in order to address the following biological questions: 1) Do the developmental stages (i.e., larvae vs. adults) influence the bacterial</p>

community associated with *P. japonica*? 2) Are the bacterial communities which are associated with the three gut regions different? 3) Does the soil have an impact on shaping the bacterial community associated with the different developmental stages of *P. japonica* (i.e., larvae, pupae and adults)? Further, we seek to: 4) investigate the isolation and molecular characterization of the nematode associated with the third larvae of *P. japonica* and the microbiota associated with the isolated nematode and 5) test the entomopathogenic activity of the nematode associated with the third larvae of *P. japonica*. Regarding the *P. japonica* bacterial community, our results show that soil microbes represent an important source of gut bacteria for *P. japonica* larvae; but, as the insect develops, its gut microbiota richness and diversity decrease substantially. These changes are in parallel with changes in community composition. Regarding the nematode associated with the third larvae of *P. japonica*, the results of both the BLAST search and the reconstruction of a phylogenetic tree using the maximum-likelihood method from 18S rRNA sequences confirm the attribution of the isolated nematode to the genus *Oschelius*. The isolated nematode leads to the mortality of more than 50% of the host after five days. The microbiota study of the nematode shows that its bacterial community is dominated by bacteria belonging to the genus *Ochrobactrum*, which includes entomopathogenic species.

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