



A B S T R A C T S B O O K

100 Anniversary

**Celebrating
100 Years
of the 1st EPN
discovery**

Omics data provide more evidence on interactions among nematode-plant-insect

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A B S T R A C T

The first part of our story which was published as Kamali et al, 2021 (DOI: 10.1111/mec.16254) showed some evidence that *Meloidogyne* nematode triggered the immune plant defense in plant roots. Also, we found that beneficial nematode modulates plant immunity against *Meloidogyne* nematodes mainly via the active expression of some enzymes. Here we have more evidence about this story. We investigated the interaction among tomato (*Solanum lycopersicum*) to two groups of nematodes: plant parasite (*Meloidogyne javanica*) and entomopathogen (*Steinernema carpocapsae*) along with a leaf-mining insect (*Tuta absoluta*). There were eight treatments on the plant. 1. *Meloidogyne* nematode, 2. *Steinernema carpocapsae*, 3. tomato leaf miner, 4. both *Meloidogyne* and *Steinernema* nematodes, 5. both *Steinernema* and leaf miner, 6. *Meloidogyne* and leaf miner, 7. all three organisms, and 8. control plant. We sequenced the RNA from all treatments and analyzed those data. Here we will discuss those interactions. We will provide more robust information on how beneficial nematodes and parasitic nematodes are interacting. We will discuss the effect of the presence of a beneficial nematode alone or in the presence of a harmful nematode, as well as during the activity of an herbivorous insect on the plant. The main discussions will be about important defense pathways in plants, such as pathways related to plant hormones and plant secondary metabolites. We also provide new evidence regarding the interaction between two nematodes and the possible effect of Ascaricide from *Steinernema* on root-knot nematodes and herbivorous insects. These data could be useful to extend our knowledge about the plant rhizosphere and ultimately could be useful for better understanding the system toward efficient plant protection strategies.

Keyword: microbial control; insect pathology; transcriptomic analysis; plant defense; entomopathogenic nematode