

Opinion Article

Study of *Caenorhabditis elegans* genome

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DESCRIPTION

The genome of the nematode *Caenorhabditis elegans* was analyzed more than 20 years ago, revealing an unusual number of C4-zinc finger orphan nuclear hormone receptors, encoded by 267 distinct NHR genes. Only about 20 of them are conserved across the animal kingdom the rest genes are the result of the HNF4-subtype of nuclear receptors expanding. However, despite the fact that most of the receptors have anticipated ligand binding domains, no ligand for any of the non-conserved, Gastrointestinal nematodes parasitism is a major issue in livestock production, particularly in cattle, where infections are often subclinical, making diagnosis difficult and exacerbating the parasites losses. The goal of this study was to find potential genes within the quantitative trait loci areas linked with Nematode Faecal Egg Count (FEC) in a Gir Holstein F2 experimental group. During the dry and rainy seasons, F2 animals were studied on FEC traits. The animals were analysed using the Illumina Bovine SNP50 Bead Chip for single-SNP genome wide association studies. FEC was shown to be linked to three significant SNPs on chromosome. One functional candidate gene was found from the QTL regions containing the SNPs: the myogenic differentiation gene, which is associated in myogenesis and muscle repair. More research is needed to fine-tune the QTL region revealed here, as well as to look for additional SNPs linked to the FEC trait in the Gir Holstein genome, as well as to study and validate the influence of this functional candidate gene. We used a cross-sectional prevalence survey in two fishing areas in the Ligurian Sea to explore the occurrence of larval ascaridoid nematodes in *Illex coindetii*, an economically important cephalopod (northwest Mediterranean Sea). Local fishermen caught a total of 745 specimens of *I. coindetii* using bottom trawling. Ascaridoid larvae (n=9) were discovered, including *Hysterothylacium* sp. (n=6) and *Anisakis* spp. (n=3).

Photorhabdus bacteria (Enterobacteriaceae) are motile, gram-negative bacteria that live in a symbiotic relationship

with infective juveniles of entomopathogenic nematodes of the genus *Heterorhabditis*. *Photorhabdus* bacterial cells are retained in the intestine of nematodes and transported into an insect host. When a nematode of the genus *Heterorhabditis* finds an insect host, it enters through natural openings or the integument directly into the hemocoel, releasing bacteria into the hemolymph. Once in the hemolymph, *Photorhabdus* bacteria multiply at the same time, generating deadly poisons that kill the insect within 24 hours. *Phyrdenus muriceus* is a *Solanaceae* pest that attacks egg plants, potatoes, and tomatoes. This pest, which attacks both the aerial and subsurface sections of the plants, causes significant harm to various crops. Infectivity of the entomopathogenic complex *Heterorhabditis* bacteriophora and the symbiotic bacterium *Photorhabdus luminescens* isolated from soil samples taken from a La Plata orchard was evaluated against *P. muriceus* pupae.

Because of its persistence in the soil, this stage was thought to be a good target for field control. Sterile soil was used to construct a 2 cm high layer in plastic pots. Pupae were strewn throughout the soil surface and subjected to 5000 infective juveniles each bug. At 48 hours following infection, seventy percent of the patients died (n=10). Nematodes can be seen inside the pupae's body in. Unlike non-parasitized pupae, the cadavers had a typical red wine hue due to the discharge of endosymbiotic bacteria in the hemocoel. *muriceus* pupae were parasitized and killed by the nematode-bacterium combination. Future research should be done to see if it can be used as a biological control for this horticulture pest.

In both land uses, the effect of earthworm casting activity on nematode community structure was identical. Casts were highly enriched in all trophic groups compared to soil times more in meadow casts, with the exception of obligate plant feeders, who were under-represented. When compared to the soil, the plant parasitic index reduced in the casts, indicating a less favourable habitat for plant parasitic nematodes.

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