Monoclonal Antibodies against dorsal and sub-ventral structures in Meloidogyne spp. (Melodogynidae, "Root-knot nematode"), 13 lines

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Technology description

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Members of the genus Meloidogyne (Chitwood; over 90 species), the root-knot nematodes (roundworm), are an agronomically important group of pathogens that establish a complex parasitic relationship with a wide range of host plants. Currently, well over 2000 plants are susceptible to root-knot nematode infections, leading to over 5% of global crop loss. Substances produced in the esophageal glands of Chitwood are secreted through the stylets of feeding root-knot nematodes, modifying several root protophloem cells into elaborate feeding sites called giant-cells. Nutrients from the giant-cells are required for the growth and pronounced morphological changes that occur during nematode development from a motile, vermiform juvenile to an enlarged, rounded, sedentary adult female. These changes include a reduction in size of the two subventral esophageal gland cells and an increase in size of the single dorsal esophageal gland cell as the nematode develops to an adult female. The development of monoclonal antibodies may help elucidate the function of several nematodal structures in organismal development and plant parasitism by facilitating isolation of proteins from complex mixtures and aid in the development of counter-measures. All nematodes pass through an embryonic stage, four juvenile stages (J1–J4) and an adult stage. Given certain similarities of Mab binding across multiple species of the Nematoda phylum, these antibodies may also be suitable for the study of development of, and parasitism by, other members of the phylum.

Reagents Description

Clone Name	Isotype	Antigen name	Reactivity
6D4E8	IgM	Dorsal/esophageal granules ofMeloidogyne spp.	M. incognita(J2 and adult stages) M. javanicaJ2 stage M arenariaJ2 stage
3H11	IgG	Subventral granules ofMeloidogyne spp	Only J2 stages of M. incognita, M. javanica,andM arenaria.PossiblyM hapla. No binding to adults

			Meloidogyne spp., female
1E12	IgG	Dorsal gland lobe, extension and ampulla (DG)	Negative binding for any stage ofM. hapla, H. glycines and C. elegans
1D9	IgG	Dorsal granules (DG)	Meloidogyne spp., female
6F11	IgG	DG	Meloidogyne spp., female
8D12	IgM	Somatic muscles ofH. glycines(J2 stage)	H. glycines(J2, adult female). C. elegans
3F4	IgM	Secretory granules within the subventral gland extensions and the ampulla in the metacorpus. Subventral granules (SvG) of J2; SvG, amphids and esophageal lumen of females	M incognita(J2 stage), M. haplas, M. javanica, and M arenaria
12H7	IgG	Hypodermal chords (J2); Dorsal gland lobe , extension and ampulla of adult females (DG)	M. incognita, M arenaria, M. javanica. M.hapla(J2 only- hypodermal chords; DG-females only)
7E1	IgM	Esophago-intestinal cells immediately posterior to metacorpus inM. incognita(female and J2)	Meloidogyne spp., female and J2
2G9	IgM	muscle	Meloidogyne spp., H. glycines.(both female and J2) C elegans
11D11	IgG	Hypodermal chords (J2); Amphids (females)	J2 ofMeloidogyne spp. and H. glycines. C. elegans. Females ofMeloidogyne spp.
11D4	IgM	Excretory canals	Females ofMeloidogyne spp.; No biding to J2
11F3	IgM	Muscle (J2 only); Metacorpal pump chamber, esophageal lumen, stylet knobs	Muscle (J2) and metacorpal pump (female):Meloidogyne spp. and H. glycines

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Application area

immunostaining, ELISA

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