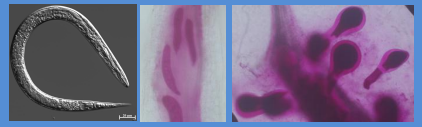


The root-knot nematode MiPDI1 effector targets a zinc finger protein to establish disease in Solanaceae and *Arabidopsis*

Jianlong Zhao[1], Michaël Quentin[2], Zhenchuan Mao[1], Bingyan Xie[1], Pierre Abad[2], Bruno Favery[2]

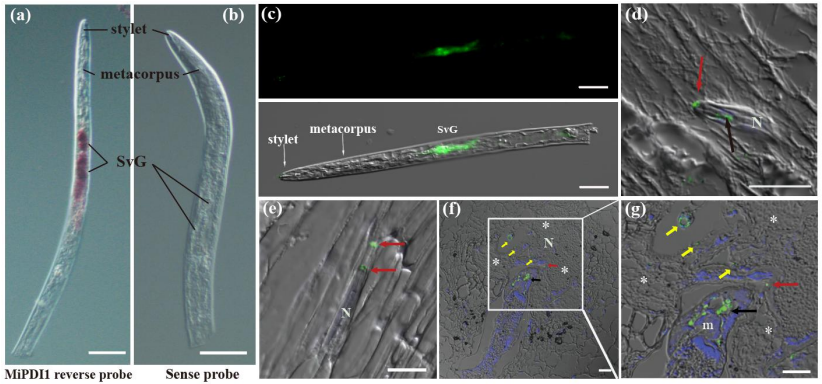
[1]Institute of Vegetables and Flowers, Chinese Academy of Agricultural Science, Beijing, China

[2]INRAE, Université Côte d'Azur, CNRS, ISA, F-06903 Sophia Antipolis, France

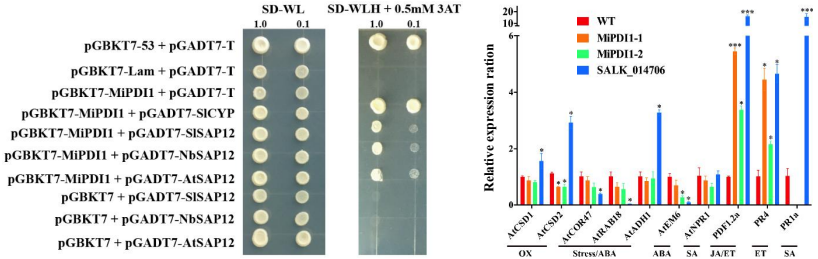
Abstract

Root-knot nematodes (RKNs; *Meloidogyne* spp.) are among the most devastating obligate parasites of plants, causing huge yield losses every year. RKNs secrete numerous effectors to facilitate parasitism, but detailed functions of nematode effectors and their plant targets remain largely unknown. Here, we characterised a *Meloidogyne incognita* protein disulphide isomerase (PDI)-like effector protein (MiPDI1) that facilitates nematode parasitism. MiPDI1 proteins are produced in the subventral glands, secreted into plant tissues and detected in the giant cells. Our results suggest that MiPDI1 acts as a pathogenicity factor promoting disease by fine-tuning SAP-mediated responses at the interface of redox signalling, defence and stress acclimation in Solanaceae and *Arabidopsis*.

Results



MiPDI1 expressed in the subventral glands, and secreted into plant tissues and giant cells.



MiPDI1 interacted with plant SAP12 proteins, and modulated plant immune responses.

Discussion

1. MiPDI1 is secreted throughout parasitism and targets the giant cells *in planta*
2. MiPDI1 targets the redox-regulated stress-associated SAP12 proteins in *Arabidopsis* and Solanaceae
3. SAP proteins play important roles in plant responses to abiotic and biotic stresses

Publication

Jianlong, Zhao et al., 2020. The root-knot nematode effector MiPDI1 targets a stress-associated protein (SAP) to establish disease in Solanaceae and *Arabidopsis*. New Phytologist **228**(4): 1417-1430.

Contact

Jianlong Zhao

zhaojianlong@caas.cn

Bruno Favery

bruno.favery@inrae.fr

Acknowledgments: Thanks Hybrigenics Services (Paris, France) for Y2H materials, Dr Antony P. Page (University of Glasgow, UK) for providing an anti-CePDI-2 and INRA SPE for financing Y2H library.