

The root-knot nematode effector MiEFF18 targets the plant host splicing machinery to permit parasitism.

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Meloidogyne incognita is a root-knot nematode (RKN) that triggers an intimate relationship with their host plant. After penetrating the plant root, *Meloidogyne* species secrete effector proteins synthesized in esophageal glands, via their stylet, into the host cells. RKN nematode effectors reprogram root vascular cells to induce the formation of a feeding structure consisting of five to seven giant cells. RKN effectors may target diverse subcellular compartments and manipulate essential developmental processes such as cell cycle, plant defenses, transcriptional regulation or phytohormonal signaling, leading to the formation of the giant cells. MiEFF18 was identified as a putative effector using genomic and transcriptomic data, combined with *in situ* hybridization [1,2]. The MiEFF18 protein is thought to carry a signal peptide for secretion, and a nuclear and a nucleolar localization signal. MiEFF18 localized in the nucleus, and particularly within the nucleolus, when transiently expressed in tobacco leaf cells. To identify MiEFF18 function during parasitism, we search for its direct targets in tomato root cells using a yeast two hybrid approach. We found a core spliceosomal Sm protein as the highest scored target of MiEFF18. We showed this Sm protein is an essential plant protein for nematode parasitism. This Sm protein is known to be involved in splicing of mRNA and to facilitate silencing in plants. We are investigating the outcomes of MiEFF18 interaction with its target, and the cellular functions, including alternative splicing, RNA quality control or PTGS modulation that may be hijacked by MiEFF18.

Keywords: Effector, root-knot nematode, splicing machinery, parasitism.

References:

- [1] Rutter *et al.*, 2014. *Mol Plant Microbe Interact.* 27(9): 965-74.
- [2] Nguyen *et al.*, 2017. *New Phytol.* 217(2): 687-699.