044 Syncytium development: the result of a sophisticated manipulation of plant cells by cyst nematodes

Aska GOVERSE[1,*], Aneta KARCZMAREK [1], Magdalena PIERZGALSKA [2], Hein OVERMARS [1], Marcin FILIPECKI [2], Jaap BAKKER [1] and Johannes HELDER [1]

[1] *Laboratory of Nematology, Department of Plant Science, Wageningen University, Binnenhaven 5, 6709 PD Wageningen, The Netherlands*
[2] *Department of Plant Genetic Breeding and Biotechnology, Warsaw Agricultural University, Nowoursynowska 166, PL-02-787 Warsaw, Poland*
[*] *Aska.Goverse@nema.dpw.wau.nl*

Potato cyst nematodes have evolved a sophisticated way to parasitise their host plants. They migrate intracellularly through the root, and an outer cortex cell is selected as a starting point for syncytium formation. The recruitment of plant cell wall-degrading enzymes by the nematode results in an expansion of the syncytium towards the vascular bundle *via* a so-called cortical bridge. A local accumulation of auxin is crucial for syncytium development. Analysis of cellulase expression patterns in tomato revealed that two auxin-inducible members (*LE-Cel7* and *LE-Cel8*) were specifically up-regulated during the onset of syncytium development. Intriguingly, nodule formation in legumes starts in the cortex, proliferates towards the stele and is also accompanied by a local accumulation of auxin. This process is preceded by the expression of *ENOD40*. To see whether this gene is also essential for syncytium development, the role of *ENOD40* was investigated in the non-legumes tomato and *Arabidopsis* upon cyst nematode infection. To unravel the molecular mechanisms that underlie syncytium induction more thoroughly, a high throughput approach is needed. cDNA-AFLP was used to monitor the expression of auxin-regulated genes in cyst nematode-infected tomato roots, and some preliminary results will be presented.