

**Only a small subset of the SPRY domain gene family in *Globodera pallida* is likely to encode effectors, two of which suppress host defences induced by the potato resistance gene *Gpa2***

**Abstract**

Analysis of the genome sequence of the potato cyst nematode, *Globodera pallida*, has shown that a substantial gene family (approximately 300 sequences) of proteins containing a SPRY domain is present in this species. This is a huge expansion of the gene family as compared to other organisms, including other plant-parasitic nematodes. Some SPRY domain proteins from *G. pallida* and *G. rostochiensis* have signal peptides for secretion and are deployed as effectors. One of these SPRYSEC proteins has been shown to suppress host defence responses. We describe further analysis of this gene family in *G. pallida*. We show that only a minority (10%) of the SPRY domain proteins in this species have a predicted signal peptide for secretion and that the presence of a signal peptide is strongly correlated with the corresponding gene being expressed at the early stages of parasitism. The data suggest that while the gene family is greatly expanded, only a minority of SPRY domain proteins in *G. pallida* are SPRYSEC candidate effectors. We show that several new SPRYSECs from *G. pallida* are expressed in the dorsal gland cell and demonstrate that some, but not all, of the SPRYSECs can suppress the hypersensitive response induced by co-expression of the resistance gene *Gpa2* and its cognate avirulence factor RBP-1 in *Nicotiana benthamiana*.