



Phylogenetically conserved TIR-NLR proteins induce transcriptional reprogramming

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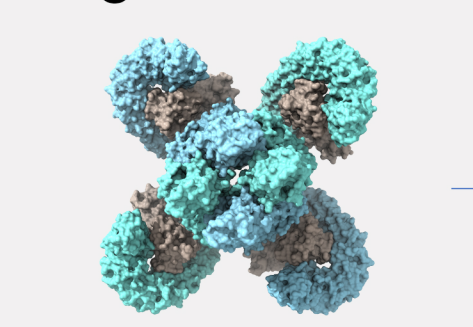
i Toll/Interleukin-1 (TIR) Nucleotide-binding leucine-rich repeat (NLR) proteins are intracellular plant immune receptors which are widely distributed across dicot plants.

TIR domain has enzymatic activity, producing small molecules involved in downstream immune signaling.

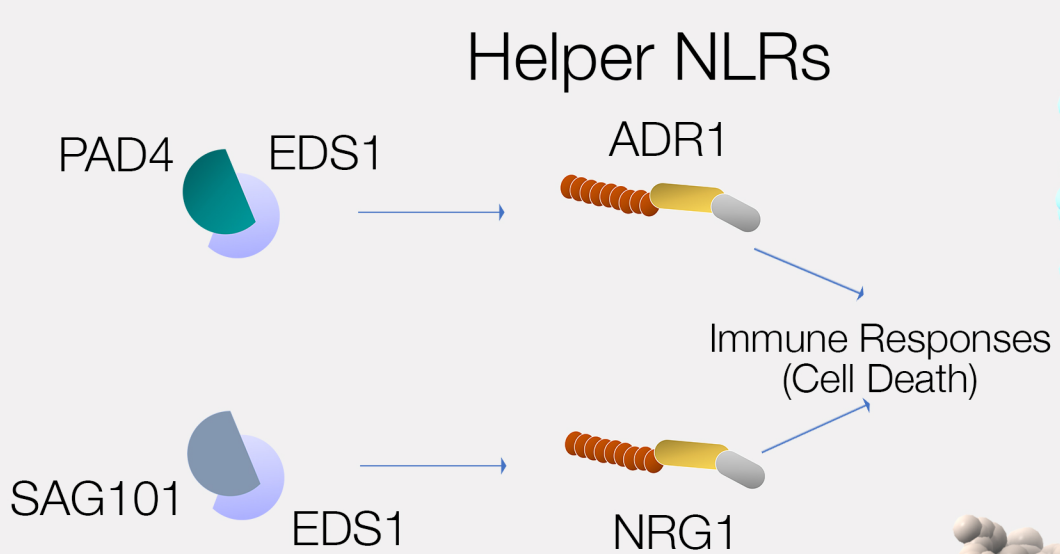
Nucleotide Binding Domain (NBD) acts as an on/off switch.

Leucine-Rich Repeat (LRR) domain interacts with the pathogen effectors and effector targets. It also inhibits NLR activation.

Oligomerisation

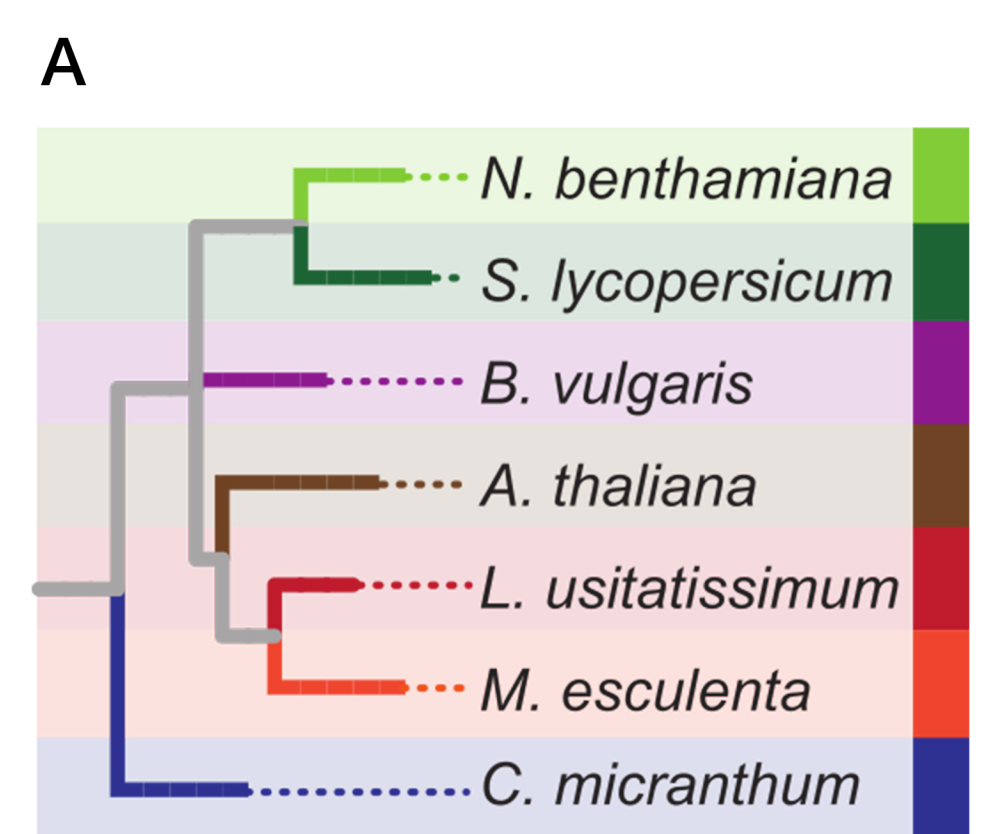


TIR-NLR resistosome

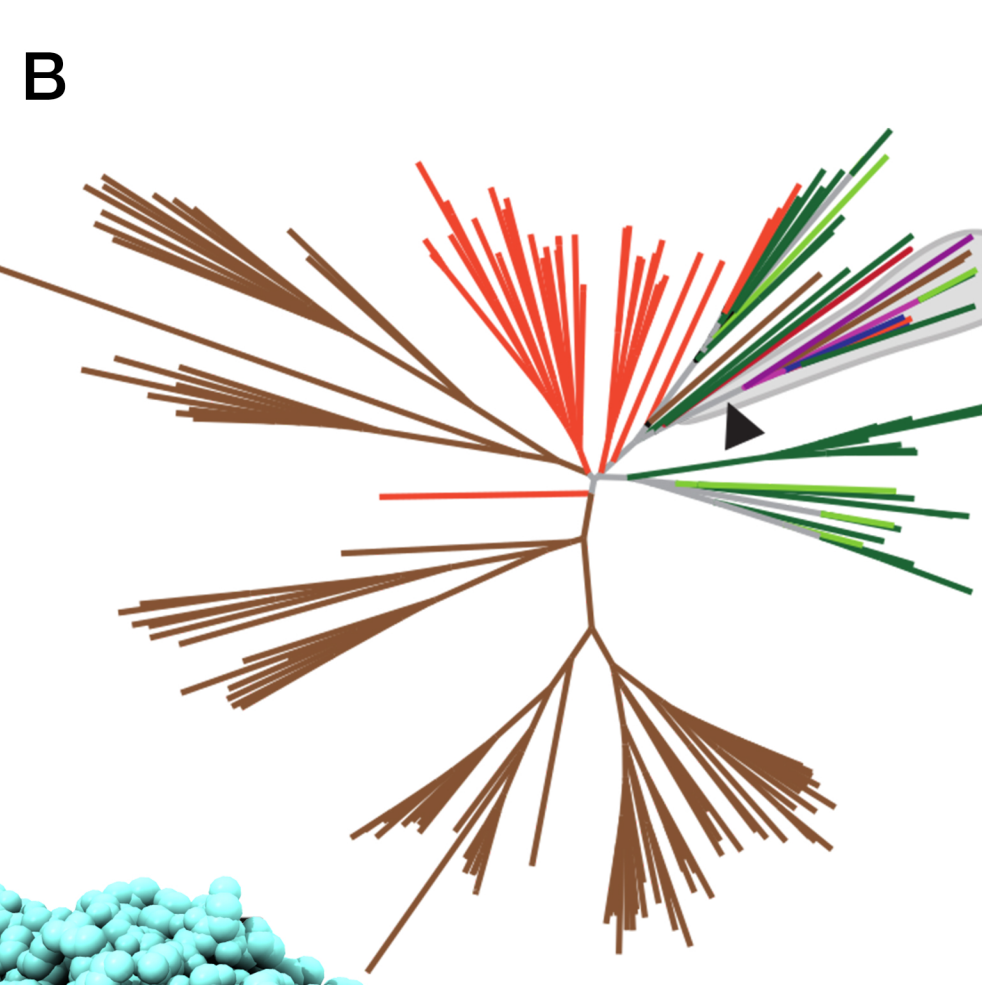


1 A clade of TIR-NLRs is highly conserved across multiple plant species

Phylogenomics

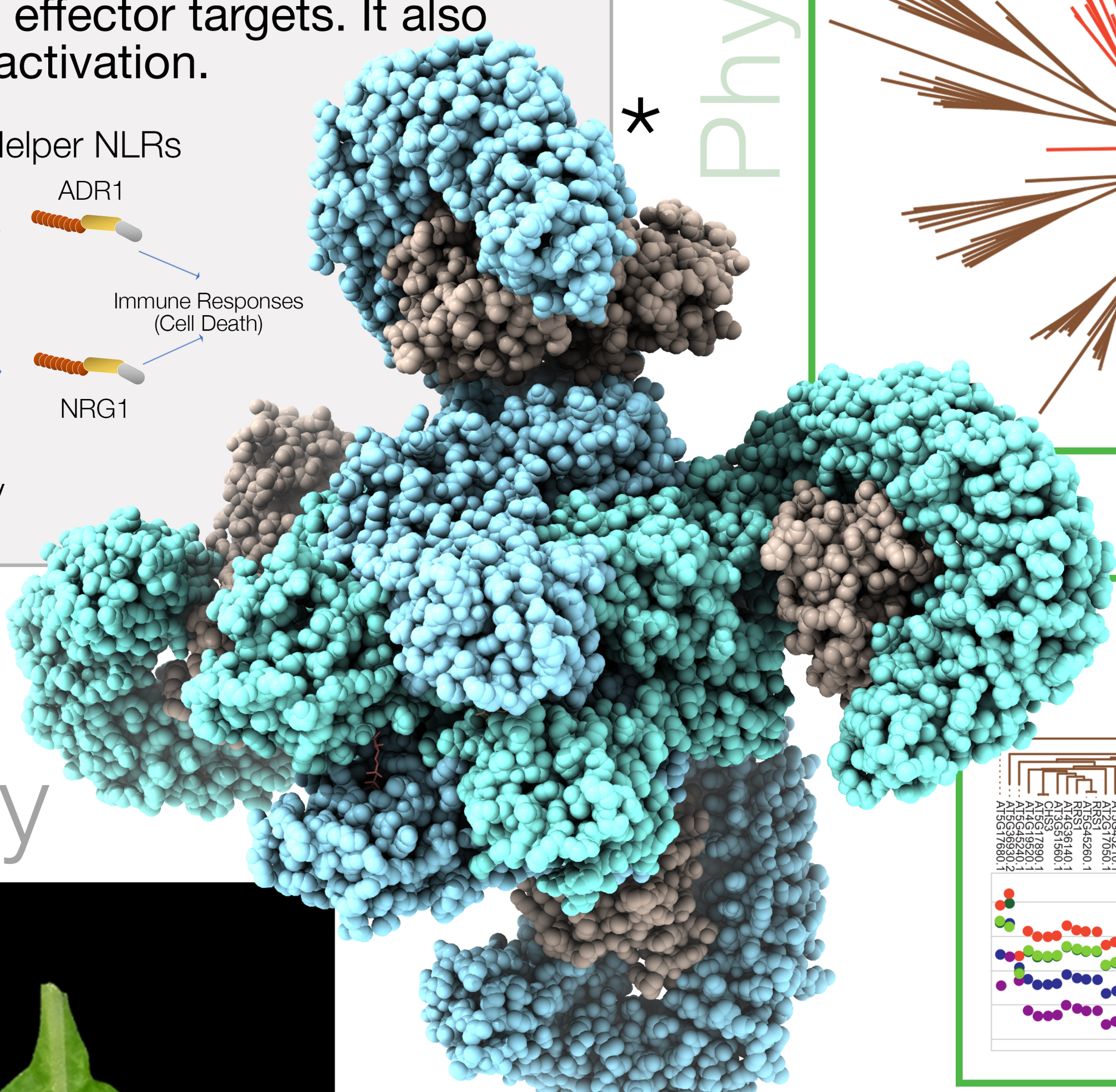
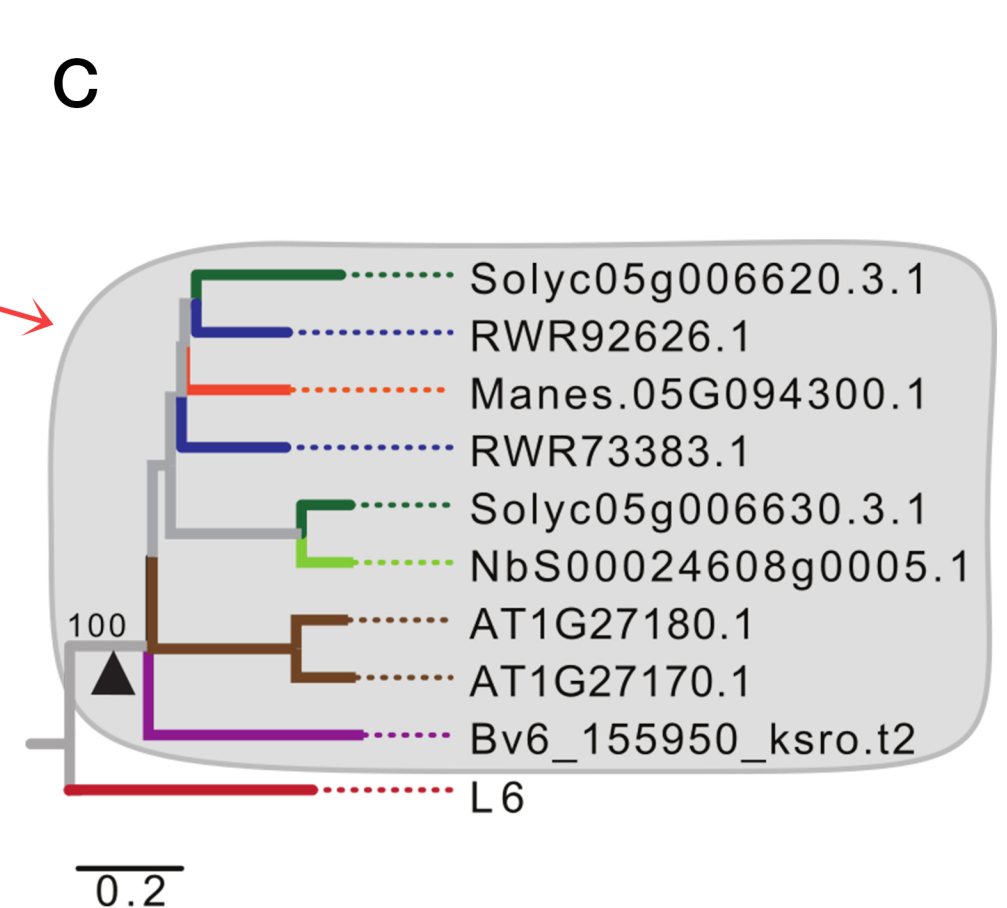


A. Phylogenetic relation of the species analysed in this study.



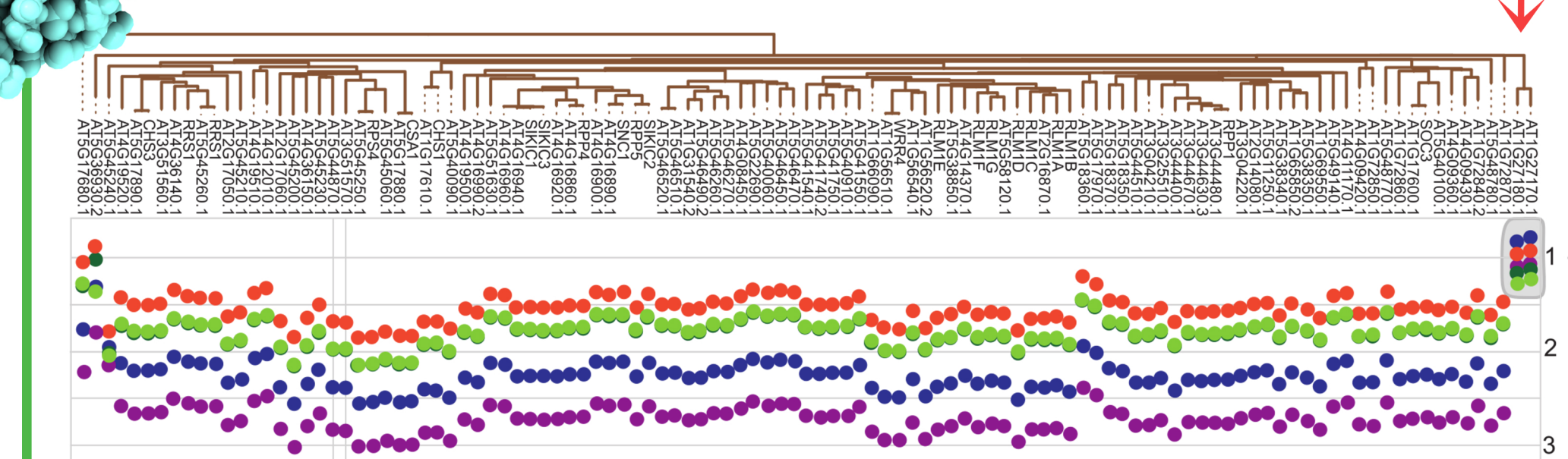
B. Phylogenetic tree of all TIR-NLRs from the studied species.

C. A clade of TIR-NLRs from different species group together.



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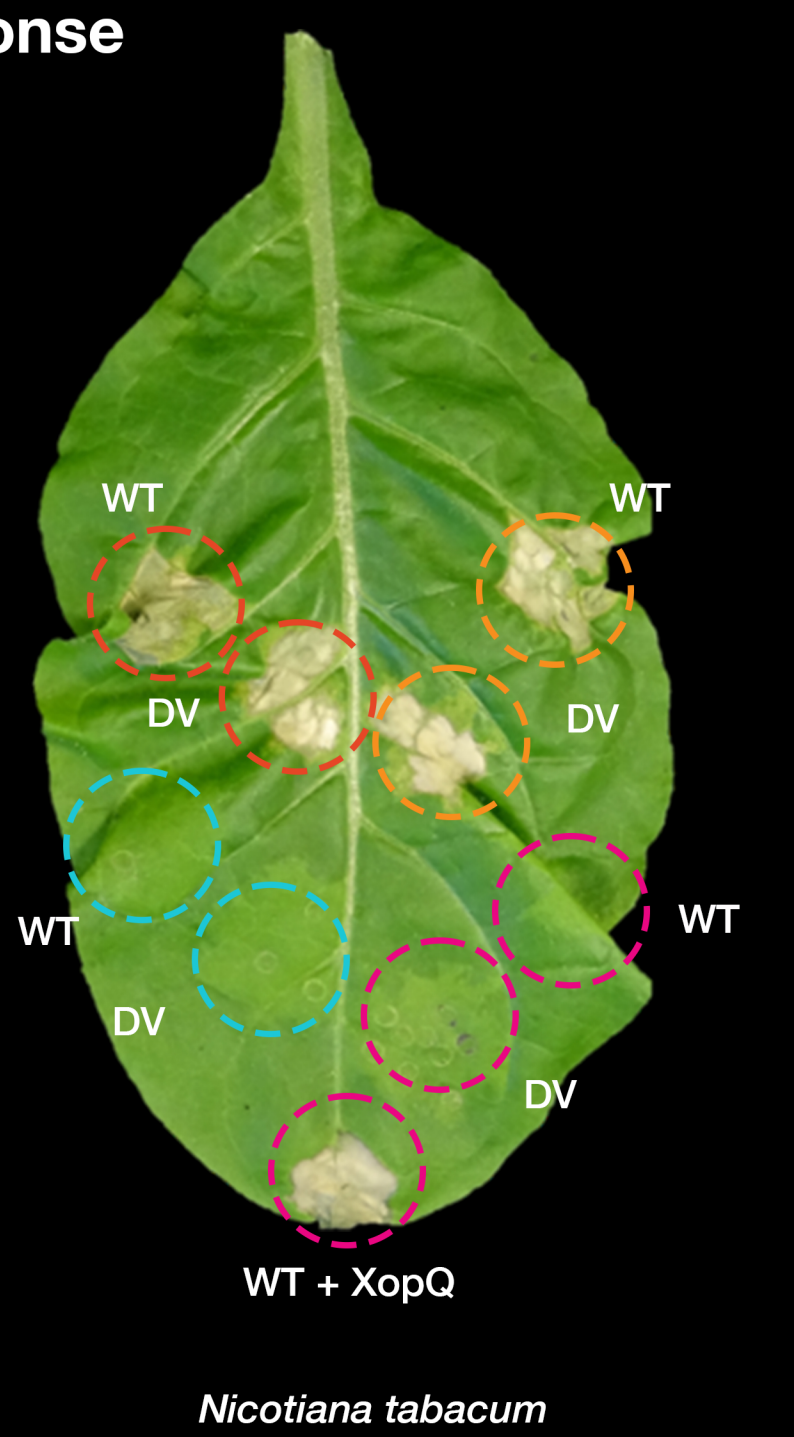
Conserved TIR-NLRs (con-TNLs) show closer patrinic distance than other TIR-NLRs



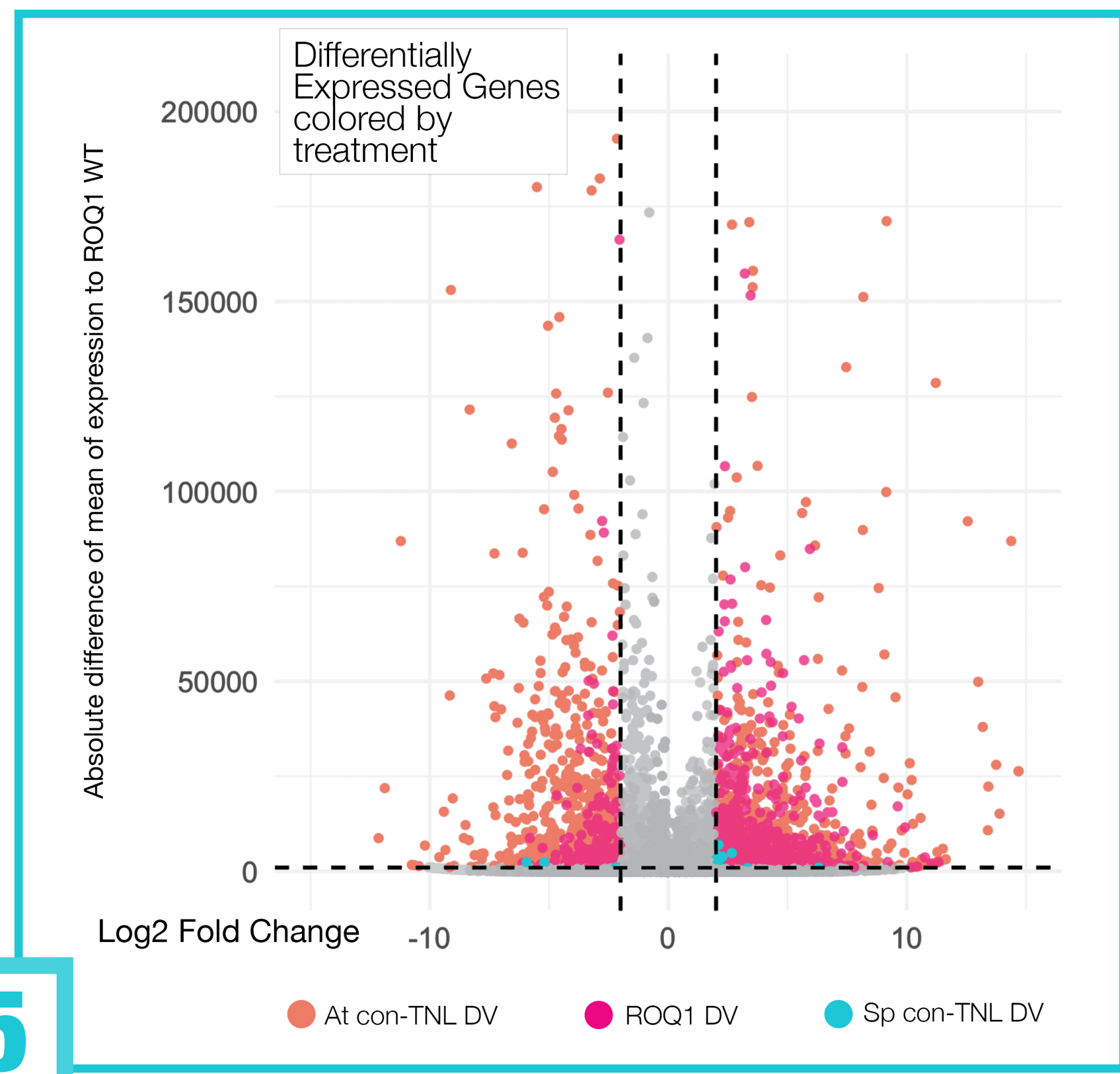
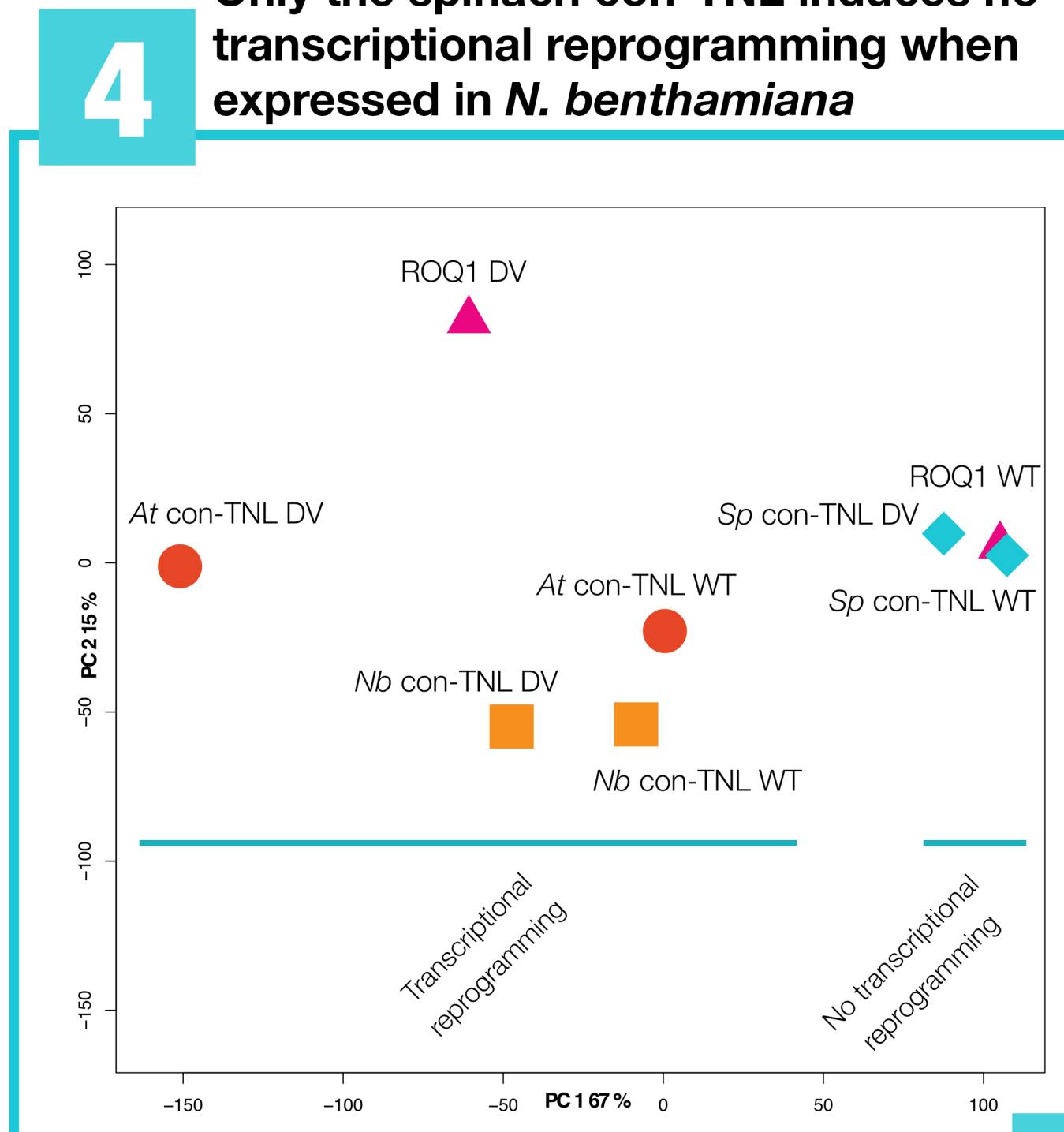
3 Functionality

Activated con-TNLs induce a hypersensitive cell death response when transiently expressed in *Nicotiana tabacum*

- *Arabidopsis thaliana* (At) con-TNL
- *Nicotiana benthamiana* (Nb) con-TNL
- *Spinacia oleracea* (Sp) con-TNL
- ROQ1: An *N. benthamiana* TIR-NLR



Only the spinach con-TNL induces no transcriptional reprogramming when expressed in *N. benthamiana*



Acknowledgements

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* A TIR-NLR (RPP1) resistosome structure. (Ma et al., Science, 2021). Also, the resistosome may appear slightly larger than the actual size.



What's next?

- What is the role of conserved TIR-NLRs?
- What downstream signaling pathway do conserved TIR-NLRs rely on?
- Why the spinach conserved TIR-NLR does not induce an immune response?