Genome-wide analysis of lectin receptor-like kinases in *Populus*

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Background

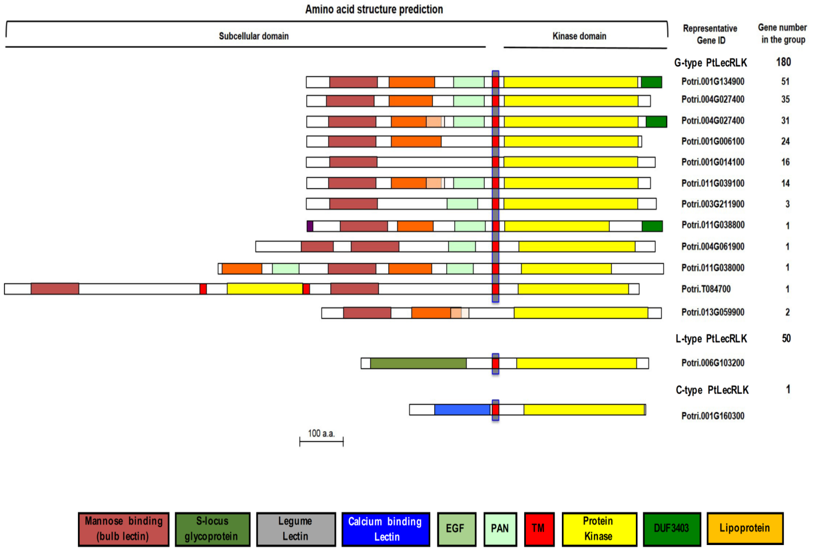
- Lectin receptor-like kinases (LecRLKs) belong to a large protein family and play an important role in plant development and innate immunity.
- A genome-wide analysis of LecRLKs in *Populus*, a woody plant important for carbon sequestration, global carbon cycling, environmental and ecological systems and biomass production was performed.

Science

- LecRLK homology searches in *Populus* identified three types of LecRLK: G-, L- and C-type.
- Phylogenetic analyses categorize PtLecRLKs into different groups and identify their relationships with LecRLKs from other species.
- RNAseq-based transcriptomics analysis reveals diverse expression patterns and identify a number of root-specific *PtLecRLK* genes.

Significance

- This study offers a comprehensive view of LecRLKs in *Populus* and provides a foundation for functional characterization of this important family of receptor-like kinases.



Domain Architecture of PtLecRLKs: G-type PtLecRLKs generally consist of a mannose binding domain and S-locus glycoprotein domain at the N-terminus and a protein kinase domain at the C-terminus, separated by the transmembrane domain; some also contain EGF, PAN and DU3404 domains. L-type PtLecRLKs contain the extracellular legume lectin domain. C-type PtLecRLK contains the calcium-binding lectin domain.

Yang Y, Labbé J, Muchero W, Yang X, Jawdy SS, Kennedy M, Johnson J, Sreedasyam A, Schmutz J, Tuskan GA, Chen JG (2016) Genome-wide analysis of lectin receptor-like kinases in *Populus*. *BMC Genomics*, 17: 699; DOI 10.1186/s12864-016-3026-2