



## **First Step of ABA-mediated Response to Drought in *Coffea***

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Drought and high temperatures are key factors which affect coffee plant development and production. *Coffea canephora* drought tolerant clones (Cc14, Cc73 and Cc120) have been characterized as vigorous plants with high productivity throughout years under water deficit. Recently, a new mechanism of ABA transduction was proposed, involving PYR/PYL/RCARs receptors interacting with PP2Cs phosphatases and SnRK2 protein kinases. The goal of this study was to identify and characterize orthologous genes of this tripartite system in coffee. For this purpose, protein sequences from *Arabidopsis*, citrus, rice, grape, and tomato were chosen as query to search orthologous genes in sequence databases. This approach allowed the identification and characterization of 24 candidate genes (9 PYL/RCAR, 6 PP2Cs and 9 SnRK2s) in *C. canephora* genome. Phylogenetic analyses allowed to classify coffee polypeptides sequences between subclasses and subfamilies expected. The gene structures of these three gene families were functionally annotated in the reference genome (Coffee Genome Hub - <http://coffee-genome.org/>). Tissue (leaf, seed, root and floral organ) differential expression was verified through *in silico* analyses. Regarding drought conditions, data from root transcriptome showed contrasting gene expression for those genes between the tolerant (Cc14, Cc73 and Cc120) and susceptible (Cc22) clones. Moreover, differential responses were also observed comparing gene expression profiles among drought tolerant clones under water deficit which suggest the existence of multiple biological mechanisms for drought tolerance in coffee. All those evidences will help to identify the genetic determinism of drought tolerance essential to obtain molecular markers that could be used in coffee breeding programs.