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Isolation and characterization of the promoter sequence of a cassava gene coding for Pt2L4, a glutamic acid-rich protein differentially expressed in storage roots

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ABSTRACT. Cassava is one of the most important tropical food crops for more than 600 million people worldwide. Transgenic technologies can be useful for increasing its nutritional value and its resistance to viral diseases and insect pests. However, tissue-specific promoters that guarantee correct expression of transgenes would be necessary. We used inverse polymerase chain reaction to isolate a promoter sequence of the *Mec1* gene coding for Pt2L4, a glutamic acid-rich protein differentially expressed in cassava storage roots. *In silico* analysis revealed putative *cis*-acting regulatory elements within this promoter sequence, including root-specific elements that may be required for its expression in vascular tissues. Transient expression experiments showed that the *Mec1* promoter is

functional, since this sequence was able to drive GUS expression in bean embryonic axes. Results from our computational analysis can serve as a guide for functional experiments to identify regions with tissue-specific *Mec1* promoter activity. The DNA sequence that we identified is a new promoter that could be a candidate for genetic engineering of cassava roots.

Key words: Cassava; Pt2L4 glutamic acid-rich protein; *In silico* analysis; Inverse polymerase chain reaction; Root promoter; Transient expression

