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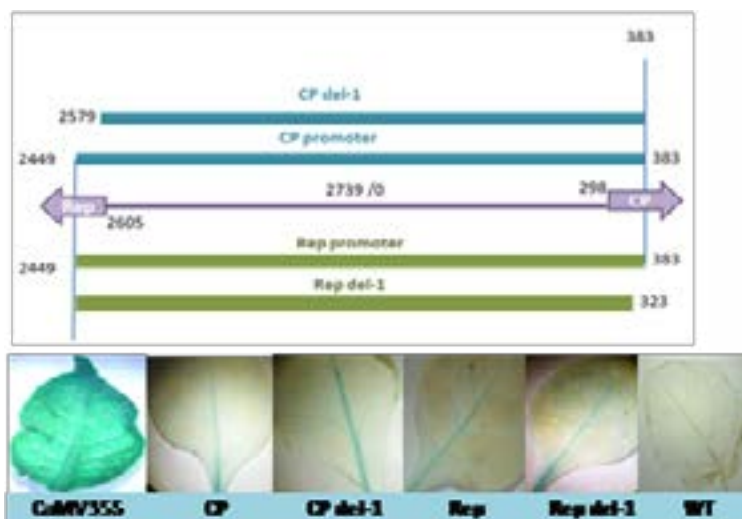
Insight into the promoter of *Indian cassava mosaic virus* (ICMV) by deletion analysis

Geetanjali Baruah, Debashish Panda, Basanta Kr Borah, Priyabrata Sen and Mahendra Kr Modi
Assam Agricultural University, India

Statement of the Problem: Although promoters are an essential part of heterologous expression systems there have been a scanty number of reports available for successful isolation of novel promoters especially in the case of tissue specific expression. In addition to that, systems biology approach has not been used widely to delineate regulatory elements of promoters.

Methodology & Theoretical Orientation: In this study, an attempt has been made to characterize a novel bi-directional promoter from the *Indian cassava mosaic virus* (ICMV, family: *Geminiviridae*) by both transient and transgenic assays to satisfy such demands. We have made several sequential deletion constructs of the bidirectional promoter of ICMV, both in the viral-sense orientation (driving the expression of AV1/ coat protein and AV2; the CP-promoter) and in the complementary-sense orientation (driving the expression of Replication associated protein and other 3 ORFs; the Rep-promoter). The deletion-constructs, two for each of these promoters were made in pBI121 binary vector driving the expression of the *Gus* gene; care was taken not to delete key motifs such as TATA box (using PlantCARE analysis). Transient as well as transgenic expression was assayed.

Findings: In transient expression assay in *Agrobacterium* and tobacco, the deleted versions (del-1) of both the promoters showed higher expression than the full-length promoters of CP and Rep. Interestingly, all the promoter constructs showed phloem specific expression. Similar observations were found in transgenic *Nicotiana tabacum* plants, raised using the full-length CP, full-length Rep and their del-1 constructs. Alongside, transcription factor (TF) binding analysis using TRANSFAC for the promoter sequences showed that the TF; CDC5 (a known transcription enhancer) was unique and over-represented in CP del-1 construct showing the highest expression. It is the first report of comparison for the deletion constructs of the viral-sense and complementary-sense cassava mosaic virus promoters and their phloem-limited expressions.



Biography

Geetanjali Baruah is a PhD Scholar in the Department of Agricultural Biotechnology at Assam Agricultural University, India. She has five years of research experience in the field of Promoter Analysis of Geminivirus and Application of Bioinformatics tools.

g.baruah6@gmail.com