



# Characterization of *FeDREB1* promoter involved in cold- and drought-inducible expression from common buckwheat (*Fagopyrum esculentum*)

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**ABSTRACT.** C-repeat-binding factor (CBF)/dehydration-responsive element (DREB) transcription factors play key roles in plant stress responses. However, little information is available on the regulation of CBF/DREB expression. In this study, we isolated and characterized the *FeDREB1* promoter sequence from the common buckwheat accession Xinong 9976. To identify the upstream region of the *FeDREB1* gene required for promoter activity, we constructed a series of *FeDREB1* promoter deletion derivatives. Each deletion construct was analyzed through *Agrobacterium*-mediated transient transformation in tobacco leaves treated with 4°C cold or drought stress. Promoter-beta-glucuronidase fusion assays revealed that the *pCD1* (-270 bp) deletion in the upstream region of *FeDREB1* could activate expression of the *GUS* gene at 4°C. The *pCD1* (-270 bp), *pCD2* (-530 bp), and *pCD3*

(-904 bp) deletion induced low-level *GUS* expression under drought stress. However, the *pCD4* (-1278 bp) deletion clearly activated *GUS* gene expression. Our results suggest that sections *pCD1* (-270 bp) and *pCD4* (-1278 bp) in the *FeDREB1* gene promoter are new sources of induced promoters for adversity-resistance breeding in plant genetic engineering.

**Key words:** Cold and drought stress; *Fagopyrum esculentum*; *FeDREB1* promoter