Promoter Identification of a Cold Acclimation Responsive Gene in Alfalfa. (C07-gana123557-Poster)

Authors:

- T.Henderson* - *Chicago State University, Chicago, IL*
- S.M.Cunningham - *Purdue University, West Lafayette, IN*
- J.J.Volenec - *Purdue University, West Lafayette, IN*
- J.A.Gana - *Chicago State University, Chicago, IL*

Abstract:

Members of a cold acclimation responsive, CAR, gene family are up-regulated by cold stress and their expression is positively associated with alfalfa (Medicago sativa L.) winter survival. Regulatory sequences driving the cold-induced response of CAR has not been characterized. We used a PCR-based assay to isolate regulatory sequences upstream from transcribed sequences of one CAR gene member (ROOTCAR1) in a freeze-tolerant (CUF 101-L) and a freeze-susceptible (CUF 101) alfalfa genotype. Two upstream regulatory fragments (1.6 kb and 1.0 kb) have been cloned from an un-amplified genomic library prepared from the freeze susceptible and freeze tolerant genotypes, respectively, using the same primer combinations. Sequences from these two putative ROOTCAR1 fragments will be analyzed for sequence motifs that may be responsible for the induced response observed for the ROOTCAR1 gene. The difference in size between the putative regulatory fragments observed for the freeze-tolerant and freeze-susceptible alfalfa genotypes might be related to polymorphisms within stress-regulatory elements, and may help to explain the differential expression of ROOTCAR1 in alfalfa cultivars that vary in freeze tolerance.

Corresponding Author Information:

Joyce Gana
Chicago State University
9501 S. King Drive/SCI 310
Chicago, IL 60628-1598

phone: 773-995-2430
e-mail: a-gana@csu.edu

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