



# Regulating effects of insertion direction of matrix attachment regions on transgenic expression in stably transformed Chinese hamster ovary cells

F. Wang, J.H. Zhang, T.Y. Wang, W.H. Dong, X.J. Yang, X.Y. Wang, L. Wang, R. Yang, Q. Li and C.P. Zhao

Department of Biochemistry and Molecular Biology,  
Xinxiang Medical University, Xinxiang, Henan, China

Corresponding author: T.Y. Wang  
E-mail: wtianyuncn@126.com

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**ABSTRACT.** We investigated the effects of different directions of insertion of matrix attachment region (MAR) sequences on transgenic expression in stably transformed Chinese hamster ovary (CHO) cells. The MAR sequences were inserted in forward or reverse directions into the expression vectors, and transfected into CHO cells. The expression of the chloramphenicol acetyltransferase (*CAT*) reporter gene and the relative copy numbers of the *CAT* gene were analyzed. The *CAT* gene expression levels in the vector with the MAR sequence inserted in the forward or reverse directions increased compared with expression without the MAR sequence. The relative copy numbers of the *CAT* gene with MAR sequenced vectors inserted in the reverse and forward directions were lower, than in the control group. The direction of insertion of MAR sequences had no significant effect on expression levels. The expression levels were not proportional to the copy numbers

of the gene.

**Key words:** Directional effect; Matrix attachment region;  
Transgenic copy number; Reporter gene