

## The use of *Arabidopsis thaliana* model system for testing oil palm promoter: case study on oil palm MT3-A promoter

### ABSTRACT

A previous study on transient expression of oil palm tissues has shown that the oil palm metallothionein-like type 3 (MT3-A) gene promoter is specifically expressed in the mesocarp and not in other tissues. This study was conducted to determine whether or not *Arabidopsis* can be used as a model system to study oil palm promoter. Functional characterisation of the oil palm MT3-A promoter was performed using promoter::GUS fusion analysis in transgenic *Arabidopsis*. The localisation of  $\beta$ -glucuronidase (GUS) expression in several different tissues of transgenic *Arabidopsis* homozygous lines driven by the oil palm MT3-A promoter was determined. Histochemical GUS analysis in transgenic *Arabidopsis* revealed the highest expression in the cotyledon and hypocotyls as well as at the early stage of plant development and gradually decreased as the plant grew. Lower expression was detected in organs of mature plant and no expression was observed in reproductive tissues. This observation may suggest that MT3-A promoter might be involved during early stage of plant development. Since we use *Arabidopsis* which is neither a fruit nor mesocarp plant to check mesocarp-specific promoter it might not give a faithful pattern of expression but it may be suited to study oil palm specific promoter derived from other tissues.

**Keyword:** Oil palm; Promoter analysis; Model plant;  $\beta$ -glucuronidase