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DIFFERENTIAL EXPRESSION OF SPECIFIC GENES

REGULATING 'ROYAL GALA' (*Malus x domestica*)

FRUIT DEVELOPMENT

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ABSTRACT

Apple (*Malus x domestica*) fruit size is facilitated by cell division and cell expansion, which in turn is regulated by plant hormones such as auxins, gibberellins, and cytokinins. In this research, we investigated the role of cell division and cell expansion in apple growth. Royal Gala cultivar was analysed over one season of harvest. Throughout the fruit development, gene expression and cell area measurement were done. The expression of cell division markers; *MdCDKB2:2* is correlated with *MdANT2* which both showing high expression pattern on early stages of time course and gradually decreasing towards the end of the time course. Cell expansion markers; *MdEXP2*, showed up-regulated expression as the cells expanded, while *MdARF106* is expressed in both cell division and cell expansion stages. Ripening related genes; *MdACO1* and *MdPG1*, were highly expressed during the ripening stage. From this research, it is found that the expressions of all the genes are specific, thus, can be ideal markers for Royal Gala fruit development in further studies.

Key words: Apple, fruit size, fruit development, cell division, cell expansion, ripening