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Targeted knockout of phospholipase A_2 to increase lipid productivity in *Chlamydomonas reinhardtii* for biodiesel production

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Abstract

Biofuel derived from microalgae have several advantages over other oleaginous crops, however, still needs to be improved with its cost aspect and can be achieved by developing of a strain with improved lipid productivity. In this study, the CRISPR-Cas9 system was incorporated to carry out a target-specific knockout of the phospholipase A_2 gene in *Chlamydomonas reinhardtii*. The targeted gene encodes a key enzyme in the Lands cycle. As a result, the mutants showed a characteristic of increased diacylglycerol pool, followed by a higher accumulation of triacylglycerol without being significantly compensated with the cell growth. As a result, the

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