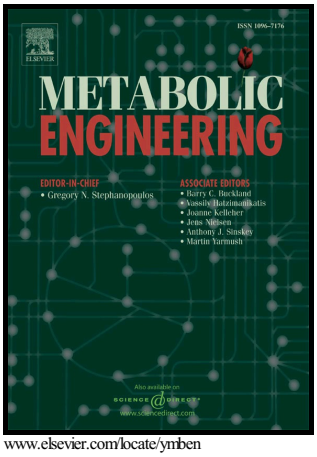


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# Phototrophic production of heterologous diterpenoids and a hydroxy-functionalized derivative from *Chlamydomonas reinhardtii*

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## Abstract

Photosynthetic microalgae harbor enormous potential as light-driven green-cell factories for sustainable bio-production of a range of natural and heterologous products such as isoprenoids. Their capacity for photosynthesis and rapid low-input growth with (sun)light and $CO_2$ is coupled to a robust metabolic architecture structured toward the generation of isoprenoid pigments and compounds involved in light capture, electron transfer, and radical scavenging. Metabolic engineering approaches using eukaryotic green microalgae have previously been hampered mainly by low-levels of nuclear transgene expression. Here, we employed a strategy of optimized transgene design which couples codon optimization and synthetic intron spreading for the expression of heterologous plant enzymes from the algal nuclear genome. The diterpenoids casbene, taxadiene, and 13*R*(+)

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