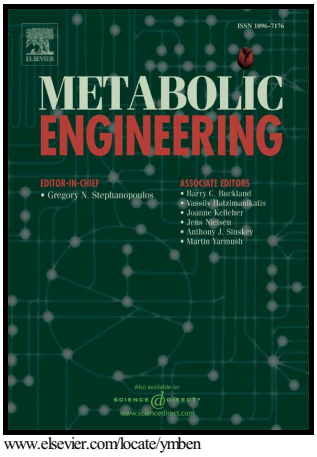

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Introducing extra NADPH consumption ability significantly increases the photosynthetic efficiency and biomass production of cyanobacteria

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Abstract

Increasing photosynthetic efficiency is crucial to increasing biomass production to meet the growing demands for food and energy. Previous theoretical arithmetic analysis suggests that the light reactions and dark reactions are imperfectly coupled due to shortage of ATP supply, or accumulation of NADPH. Here we hypothesized that solely increasing NADPH consumption might improve the coupling of light reactions and dark reactions, thereby increasing the photosynthetic efficiency and biomass production. To test this hypothesis, an NADPH consumption pathway was constructed in cyanobacterium *Synechocystis* sp. PCC 6803. The resulting extra

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