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Enhancement of cyanobacterial ethanol production by co-factor engineering

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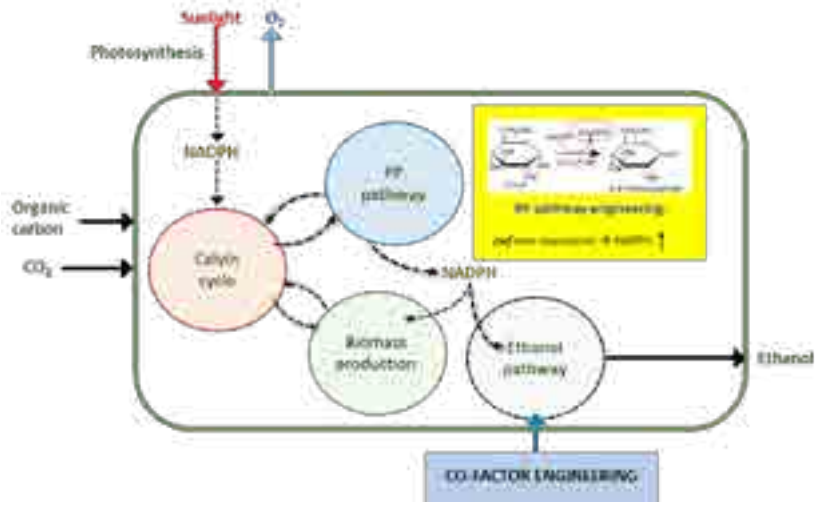
Cyanobacteria have gained a great attention as promising ethanol producer. Genetically engineered cyanobacteria can produce ethanol from the atmospheric carbon dioxide using sunlight as the sole energy source. Their rapid growth rate, low land requirement for cultivation, natural diversity and potential to genetic engineering offer great advantages over competing resources such as wood and agricultural crops/residues. However, cyanobacterial ethanol production is still a long way to commercialization due to low productivity. Due to the abundant NADPH produced from photosynthesis, NADPH-utilizing pathway is more favored than NADH-utilizing pathway in cyanobacteria. By reducing the NADH-dependence in ethanol production pathway, we can exploit the abundant NADPH-pool and increase the ethanol production. It is also expected that increased NADPH supply through metabolic engineering can create a synergistic effect for ethanol production. In this talk, we introduce our research to increase ethanol production of cyanobacteria by applying these approaches.



Biography

Jong Moon Park has been working in the field of Energy and Environmental Engineering, using biotechnology as a tool in the research. One of his outstanding research performances is achieved in biosorption of heavy metals using biomass, which is an integrated study of environmental engineering and biotechnology. Recently, he focuses on biomass researches, more specifically on biorefinery and bioenergy production from biomass such as micro- and macro-algae and organic wastes.

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