Knockdown of PsbO leads to induction of HydA and production of photobiological H_2 in the green alga *Chlorella sp.* DT

Hsin-Di Lin, Bang-Hung Liu, Ting-Ting Kuo, Hsieh-Chi Tsai, Teng-Yung Feng, Chieh-Chen Huang, Lee-Feng Chien

PII: S0960-8524(13)00869-9
DOI: http://dx.doi.org/10.1016/j.biortech.2013.05.101
Reference: BITE 11888

To appear in: *Bioresource Technology*

Received Date: 25 March 2013
Revised Date: 26 May 2013
Accepted Date: 27 May 2013

Please cite this article as: Lin, H-D., Liu, B-H., Kuo, T-T., Tsai, H-C., Feng, T-Y., Huang, C-C., Chien, L-F., Knockdown of PsbO leads to induction of HydA and production of photobiological H_2 in the green alga *Chlorella sp.* DT, *Bioresource Technology* (2013), doi: http://dx.doi.org/10.1016/j.biortech.2013.05.101

Knockdown of PsbO leads to induction of HydA and production of photobiological H_2 in the green alga *Chlorella sp*. DT

Hsin-Di Lin[a], Bang-Hung Liu[a] , Ting-Ting Kuo[a], Hsieh-Chi Tsai[a], Teng-Yung Feng[b], Chieh-Chen Huang[a,c,*], Lee-Feng Chien[a,*]

a. Department of Life Sciences, National Chung Hsing University, Taichung 402, Taiwan

b. Institute of Plant and Microbial Biology, Academia Sinica, Nankang, Taipei 115, Taiwan

c. Agricultural Biotechnology Center, National Chung Hsing University, Taichung 402, Taiwan

*Corresponding authors: Lee-Feng Chien, lfchien@dragon.nchu.edu.tw; Chieh-Chen Huang, cchuang@dragon.nchu.edu.tw.

Keywords: green alga, PsbO, knockdown, HydA, induction, H_2 production

Abstract

Green algae are able to convert solar energy to H_2 via the photosynthetic electron transport pathway under certain conditions. Algal hydrogenase (HydA, encoded by *HYDA*) is in charge of catalyzing the reaction: $2H^+ + 2e^- \leftrightarrow H_2$ but usually inhibited by O_2, a byproduct of photosynthesis. The aim of this study was to knockdown PsbO (encoded by *psbO*), a subunit concerned with O_2 evolution, so that it would lead to