Desiccation tolerant lichens facilitate in vivo H/D isotope effect measurements in oxygenic photosynthesis

David J. Vinyard, Gennady M. Ananyev, G. Charles Dismukes

PII: S0005-2728(18)30130-0
DOI: doi:10.1016/j.bbabio.2018.05.014
Reference: BBABIO 47926

To appear in: *BBA - Bioenergetics*

Received date: 28 February 2018
Revised date: 21 May 2018
Accepted date: 23 May 2018

Please cite this article as: David J. Vinyard, Gennady M. Ananyev, G. Charles Dismukes , Desiccation tolerant lichens facilitate in vivo H/D isotope effect measurements in oxygenic photosynthesis. Bbabio (2018), doi:10.1016/j.bbabio.2018.05.014

Desiccation tolerant lichens facilitate in vivo H/D isotope effect measurements in oxygenic photosynthesis

David J. Vinyard[1,2,a], Gennady M. Ananyev[1,2], and G. Charles Dismukes[2,3] *

[1] Department of Chemistry, Princeton University, Princeton, NJ 08544 USA
[2] Waksman Institute of Microbiology, Rutgers University, Piscataway, NJ 08854 USA
[3] Department of Chemistry and Chemical Biology, Rutgers University, Piscataway, NJ 08854 USA

* Corresponding author: dismukes@chem.rutgers.edu
610 Taylor Rd.
Piscataway, NJ 08854
(848) 445-1489

Keywords: Photosystem II, lichens, isotope effects, water oxidation

[a] Current Address: Department of Biological Sciences, Louisiana State University, Baton Rouge, LA 70803 USA

Highlights:

- Lichens are introduced as a model system for measuring isotope effects in photosynthesis.
- Lichens can be reversibly dehydrated then hydrated with either H_2O or D_2O.
- Photosystem II efficiency was measured with either H_2O or D_2O *in vivo*.
- H/D isotope effects are attributed to both donor and acceptor side reactions.