frontiers in Plant Science

CORRECTION
published: 22 December 2020
doi: 10.3389/fpls.2020.631667

Corrigendum: Membrane Inlet Mass Spectrometry: A Powerful Tool for Algal Research

Adrien Burlacot†, François Burlacot†, Yonghua Li-Beisson† and Gilles Peltier†*

Aix Marseille Univ, Commissariat à l'énergie Atomique et aux énergies Alternatives (CEA), Centre National de la Recherche Scientifique (CNRS), Institut de Biosciences et Biotechnologies d'Aix- Marseille (BIAM), CEA Cadarache, Saint Paul-Lez-Durance, France

Keywords: gas exchange, photosynthesis, carbonic anhydrase, CO_2 concentrating mechanism, O_2 evolution, H_2 production, microalgae, cyanobacteria

Edited by:
Pietro Franceschi, Fondazione Edmund Mach, Italy

Reviewed by:
Giuseppe Pieraccini, University of Florence, Italy

***Correspondence:**
Gilles Peltier
gilles.peltier@cea.fr

†ORCID:
Adrien Burlacot
orcid.org/0000-0001-7434-6416
François Burlacot
orcid.org/0000-0001-9783-6848
Yonghua Li-Beisson
orcid.org/0000-0003-1064-1816
Gilles Peltier
orcid.org/0000-0002-2226-3931

Specialty section:
This article was submitted to Technical Advances in Plant Science, a section of the journal Frontiers in Plant Science

Received: *20 November 2020*
Accepted: *03 December 2020*
Published: *22 December 2020*

Citation:
Burlacot A, Burlacot F, Li-Beisson Y and Peltier G (2020) Corrigendum: Membrane Inlet Mass Spectrometry: A Powerful Tool for Algal Research. Front. Plant Sci. 11:631667. doi: 10.3389/fpls.2020.631667

A Corrigendum on

Membrane Inlet Mass Spectrometry: A Powerful Tool for Algal Research
by Burlacot, A., Burlacot, F., Li-Beisson, Y., and Peltier, G. (2020). Front. Plant Sci. 11:1302. doi: 10.3389/fpls.2020.01302

In the original article, in the paragraph on the "Assessment of Photosynthetic Oxygen Exchange," we defined the O_2 uptake rate with a negative value when oxygen is consumed. Although it has been historically the first way to define it (Hoch and Kok, 1963), it makes more sense to use a positive value as adopted later by Radmer and Kok (1976) because a negative uptake would mean the usage of a double negative which implies production.

Therefore, Equations (1), (2), and (3) should be read;

$$O_2\ Uptake\ = -v_{^{18}O_2} \times (1 + \frac{C_{^{16}O_2}(t)}{C_{^{18}O_2}(t)}) \quad (1)$$

$$O_2\ Evolution\ = v_{^{16}O_2} - v_{^{18}O_2} \times \frac{C_{^{16}O_2}(t)}{C_{^{18}O_2}(t)} \quad (2)$$

$$Net\ O_2\ = O_2\ Evolution - O_2\ Uptake \quad (3)$$

As a consequence, the plots shown on the original **Figure 5** have been replaced by the attached **Figure 5**.

The authors would like to thank Dr. Duncan Fitzpatrick for highlighting this problem and for suggesting changes to increase clarity of the article.

The authors apologize for this error and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

REFERENCES

Hoch, G., Kok, B. (1963). A mass spectrometer inlet system for sampling gases dissolved in liquid phases. *Arch. Biochem. Biophys.* 101, 160–170. doi: 10.1016/0003-9861(63)90546-0

Radmer, R. J., Kok, B. (1976). Photoreduction of O_2 pimes and replaces CO_2 assimilation. *Plant Physiol.* 58, 336–340. doi: 10.1104/pp.58.3.336

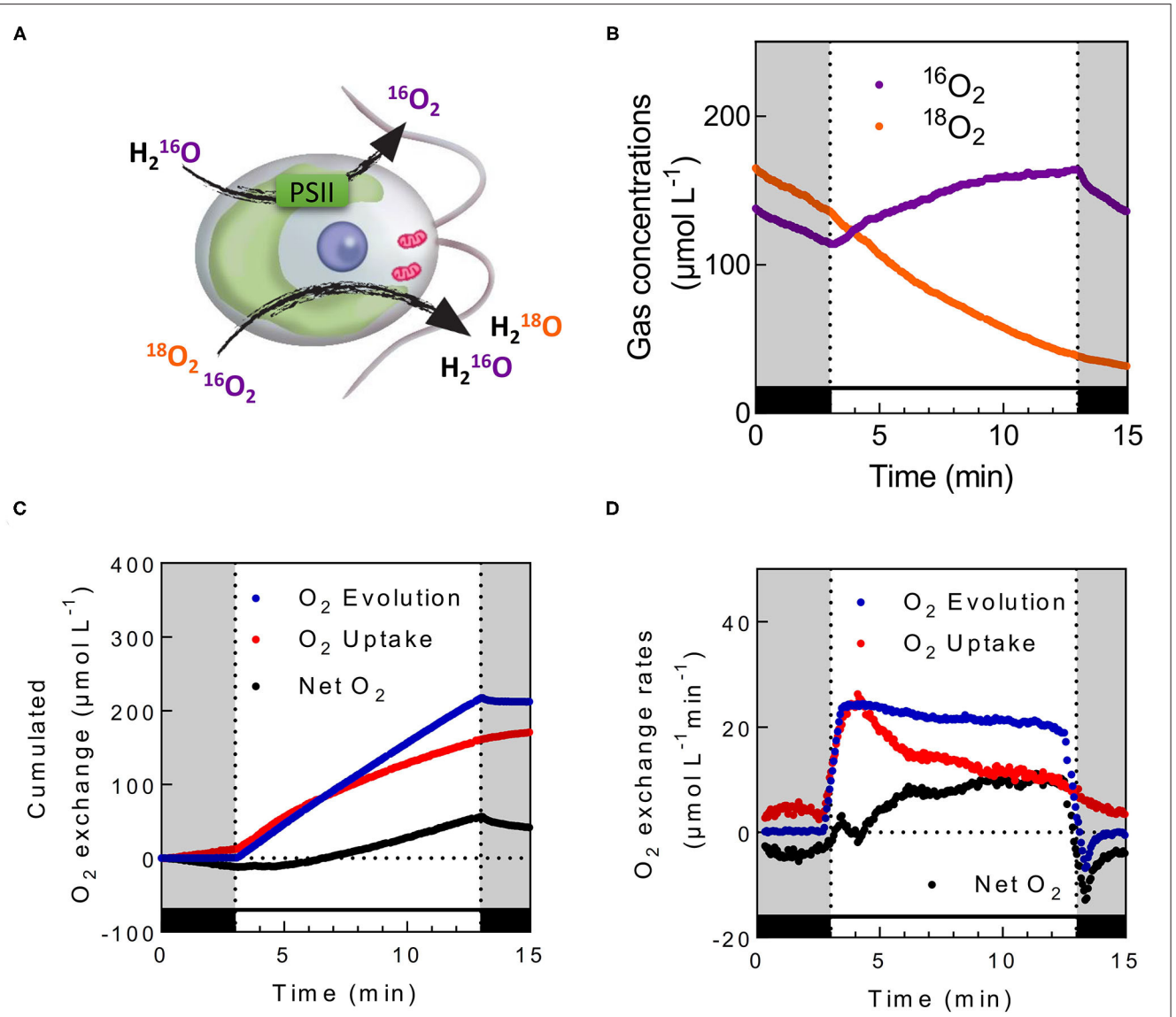

FIGURE 5 | *In vivo* measurements of photosynthetic O_2 exchange in the presence of ^{18}O-labeled O_2. **(A)** Schematic view of oxygen exchange illustrated in *C. reinhardtii*. While photosystem II (PSII) produces unlabeled O_2 from the photolysis of H_2O, oxygen uptake mechanisms consume both ^{18}O-labeled and unlabeled O_2 **(B)** $^{16}O_2$ and $^{18}O_2$ concentrations measured in *C. reinhardtii* cells during dark–light transients. **(C,D)** Calculated cumulated O_2 exchanges **(C)** and the corresponding O_2 exchange rates **(D)** for the same experiment. Cells were grown photoautotrophically in air, centrifuged and resuspended in fresh medium at a concentration of 20 µg Chl ml^{-1}. Upon addition of 5 mM HCO_3^-, $^{18}O_2$ was injected inside the cell suspension, and the reaction vessel was closed. After 5 min of dark adaptation, green light was turned on (500 µmol photon m^{-2} s^{-1}) for 10 min. Levels of $^{16}O_2$ and $^{18}O_2$ were recorded at respective m/z = 32 and 36. O_2 Uptake (red), O_2 Evolution (blue), and Net O_2 production (black) were calculated as described; cumulated gas exchange were calculated by directly integrating obtained exchange rates. To limit noise on the exchange rates graphic, data shown in **(D)** are integrated with a sliding average of 30 s wide.