Biochimica et Biophysica Acta 1807 (2011) 530–531

Contents lists available at ScienceDirect

Biochimica et Biophysica Acta

journal homepage: www.elsevier.com/locate/bbabio

Corrigendum

Corrigendum to "A novel functional element in the N-terminal region of *Arum concinnatum* alternative oxidase is indispensable for catalytic activity of the enzyme in HeLa cells" [Biochim. Biophys. Acta 1797 (2010) 20–28]

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The authors regret that the above-referenced article contains a critical error that affects a major point of their conclusions. The authors reported a novel functional element in the N-terminal region of alternative oxidase (AOX). This element was misidentified due to erroneous handling of experimental data.

The error was found in Fig. 4A of the original article. Structures of two chimeric proteins, namely chimera 1 and chimera 2, were illustrated reversely in this figure; chimera 1 actually had the primary structure of chimera 2 and vice versa. The corrected version of Fig. 4A is included below as Fig. 1.

In response to this finding, the authors reexamined data presented in Fig. 4B and Fig. 4C of the original article in replicated experiments and confirmed that they were reproducible. These findings are shown in Fig. 2 and Fig. 3, below.

These facts comprehensively reveal that structure–function relationships of the proteins presented in the paper were incorrect.

The authors previously concluded that E83K in the N-terminal region determines active or inactive nature of the enzyme, listed below as Fig. 4A. However, considering the fact that structures of chimera 1 and chimera 2 were reversed, a structural element necessary for AOX activity should exist in the C-terminal half of the enzyme, indicated in Fig. 4B below.

Given this data, the authors note that their previous conclusion is fundamentally flawed.

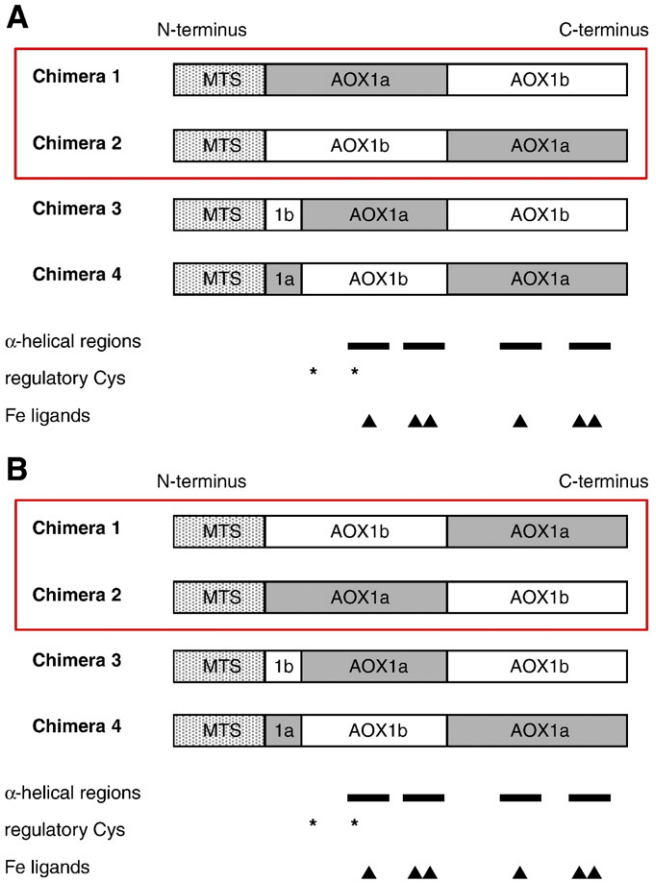

Fig. 1. Structures of chimeric AOX proteins erroneously represented in Fig. 4A of the original article. (A) The original figure in which structures of chimera 1 and chimera 2 are reversely represented. (B) Modified version of the figure in which structures of the proteins are correctly represented. The erroneous part is indicated with a red box. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

DOI of original article: 10.1016/j.bbabio.2009.07.006.
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doi:10.1016/j.bbabio.2011.02.008

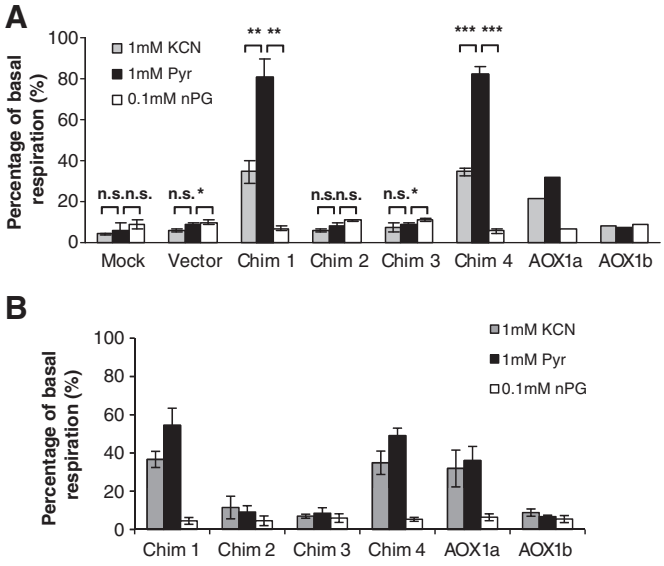

Fig. 2. Results of replicated experiments examining reproducibility of data presented in Fig. 4B of the original article. (A) The original figure in which functionalities of the chimeric AOX proteins are shown. (B) Results of the replicated experiments; $n=4$ for the chimeric proteins and $n=3$ for AOX1a and AOX1b. In the replicated experiments, mock and vector controls were not examined. Chim indicates chimera; AOX1a, AcoAOX1a; AOX1b, AcoAOX1b.

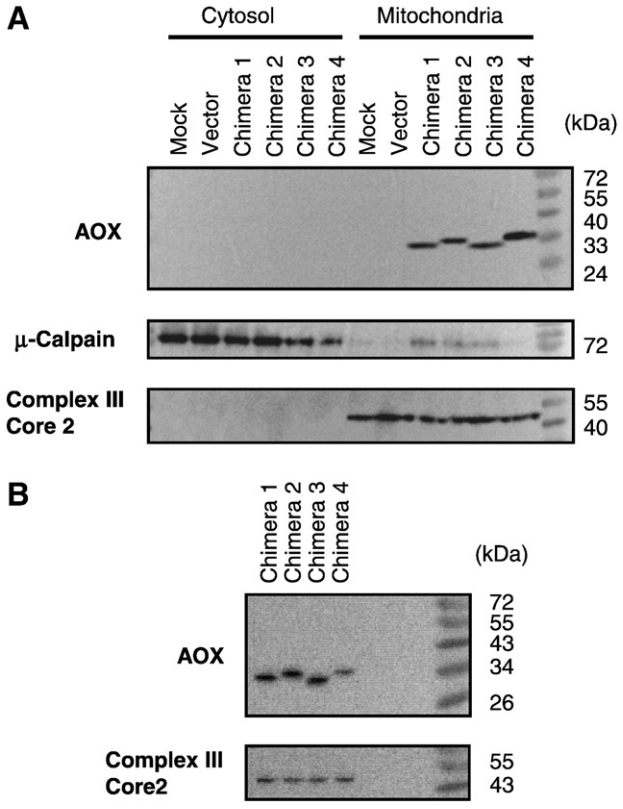

Fig. 3. Results of replicated experiments examining reproducibility of data presented in Fig. 4C of the original article. (A) The original figure in which expression and localization of the chimeric AOX proteins are shown. (B) Results of the replicated experiments. Expression of the chimeric proteins and complex III core 2 protein, a mitochondrial marker protein, in mitochondrial fractions of transformed HeLa cells were immunologically detected. Three independent sets of the chimeric proteins were analyzed and a representative image is shown.

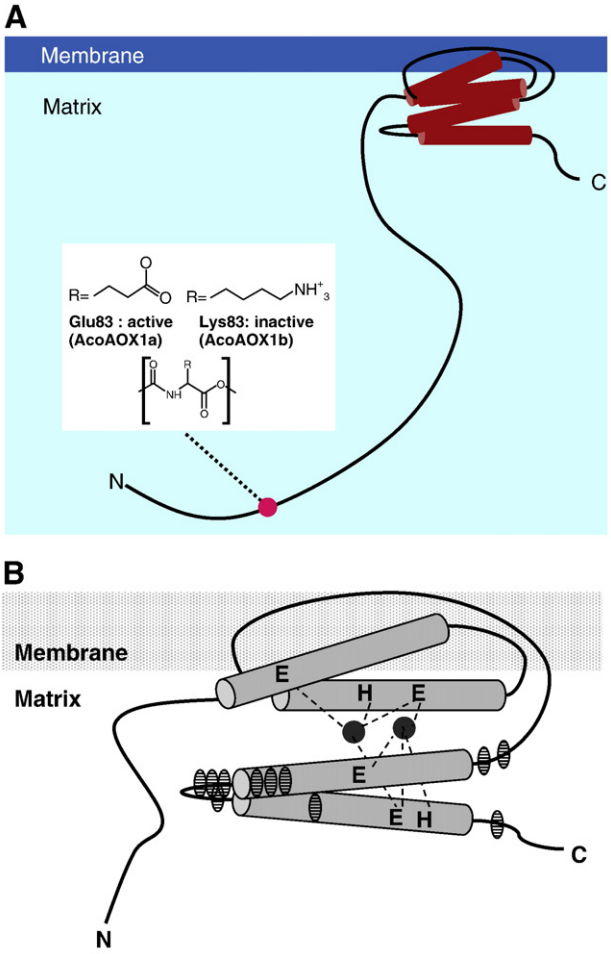

Fig. 4. An erroneous conclusion illustrated in Fig. 6A of the original article. (A) The original figure in which E83K in the N-terminal region of the protein is misidentified as a cause for inactive nature of AcoAOX1b. (B) Modified version of the figure illustrating the corrected conclusion. Candidate positions of a crucial substitution that is responsible for the inactive nature of AcoAOX1b are indicated with striped circles. In this drawing, gray cylinders represent four alphahelical structures and black circles represent two iron atoms in the catalytic center.