

Accepted Manuscript

Title: The intermembrane space protein Erv1 of *Trypanosoma brucei* is essential for mitochondrial Fe-S cluster assembly and operates alone

Authors: Alexander C. Haindrich, Michala Boudová, Marie Vancová, Priscila Peña Diaz, Eva Horáková, Julius Lukeš



PII: S0166-6851(17)30047-6
DOI: <http://dx.doi.org/doi:10.1016/j.molbiopara.2017.03.009>
Reference: MOLBIO 11060

To appear in: *Molecular & Biochemical Parasitology*

Received date: 10-10-2016
Revised date: 24-3-2017
Accepted date: 29-3-2017

Please cite this article as: Haindrich Alexander C, Boudová Michala, Vancová Marie, Diaz Priscila Peña, Horáková Eva, Lukeš Julius. The intermembrane space protein Erv1 of *Trypanosoma brucei* is essential for mitochondrial Fe-S cluster assembly and operates alone. *Molecular and Biochemical Parasitology* <http://dx.doi.org/10.1016/j.molbiopara.2017.03.009>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

The intermembrane space protein Erv1 of *Trypanosoma brucei* is essential for mitochondrial Fe-S cluster assembly and operates alone

Alexander C. Haindrich ^{a,b,\$,#}, Michala Boudová ^{b,\$}, Marie Vancová ^a, Priscila Peña Diaz ^a, Eva Horáková ^a, Julius Lukeš ^{a,b,c,*}

^a *Institute of Parasitology, Biology Centre, 37005 České Budějovice (Budweis), Czech Republic*

^b *Faculty of Sciences, University of South Bohemia, 37005 České Budějovice (Budweis), Czech Republic*

^c *Canadian Institute for Advanced Research, Toronto, Ontario M5G 1Z8, Canada*

^{\$} Equal contribution

[#] Present address: Institute of Plant Sciences, University of Bern, Bern, Switzerland

^{*} Corresponding author: Institute of Parasitology, Biology Centre, Branišovská 31, 37005 České Budějovice, Czech Republic. *E-mail address:* jula@paru.cas.cz

.

Highlights

- TbErv1 functions without Mia40 homologue and any other interaction partner
- TbErv1 have a role in Fe-S cluster assembly in the organelle
- TbErv1 seems to have a role in the mitochondrial translocation

Abstract

Sulfhydryl oxidase Erv1 is a ubiquitous and conserved protein of the mitochondrial intermembrane space that plays a role in the transport of small sulfur-containing proteins. In higher eukaryotes, Erv1 interacts with the mitochondrial import protein Mia40. However, *Trypanosoma brucei* lacks an obvious Mia40 homologue in its genome. Here we show by tandem affinity purification and mass spectrometry that in this excavate protist, Erv1 functions without a Mia40 homologue and most likely any other interaction partner. Down-regulation of TbErv1 caused a reduction of the mitochondrial membrane potential already within 24 hrs to less than 50% when compared with control cells. Depletion of TbErv1 was accompanied by accumulation of trCOIV precursor, with a concomitant reduction of aconitase activity both in the cytosol and mitochondrion. Overall, TbErv1 seems to have a role in the mitochondrial translocation and Fe-S cluster assembly in the organelle.

Keywords: *Trypanosoma*; Erv1; Fe-S cluster assembly; mitochondrion

Download English Version:

<https://daneshyari.com/en/article/5591743>

Download Persian Version:

<https://daneshyari.com/article/5591743>

[Daneshyari.com](https://daneshyari.com)