

A Mitochondrial calcium dynamics - checks and balances of energy physiology

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Auteur	Schwarzländer, Markus [1], Wagner, Stephan [2], Fuchs, Philippe [3], Logan, David [4], Van Aken, Olivier [5], Finkemeir, I [6], Szabo, Ildiko [7], Teardo, Enrico [8], Smrutisanjita, Behera [9], Costa, Alex [10]
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Mots-clés	Calcium [11], energy physiology [12], fluorescent protein sensors [13], In vivo imaging [14], mitochondria [15]
Résumé en anglais	<p>Mitochondria conserve the energy released from metabolic redox reactions and supply the cell with ATP. When the rate of respiratory metabolism does not match ATP demand active regulation of mitochondrial function is essential. For plants particularly sophisticated regulation strategies can be expected, to ensure maintenance of homeostasis in the presence of frequent environmental changes. Yet, the mechanisms by which such control is achieved in vivo are poorly understood.</p> <p>Calcium acts as a key regulator of mitochondrial energy metabolism in mammals by modulating the activity TCA cycle dehydrogenases. Calcium flux into the matrix is controlled by the recently identified mitochondrial uniporter complex. Plants contain homologues of components of the uniporter, but their function has been unclear. To understand how mitochondrial calcium dynamics are regulated and what their impact is on energy metabolism, we have combined reverse genetics with in vivo sensing of calcium. Fluorescent protein sensors and quantitative confocal imaging allow monitoring of mitochondrial energy physiology in living Arabidopsis tissues. We have found that several homologues of components of the mitochondrial calcium uniporter complex localize to mitochondria in Arabidopsis. Mutant lines have shown severely altered mitochondrial calcium levels and abnormal organellar calcium transients, providing a novel genetic handle on the dissection of the role of calcium regulation in plant mitochondria. We will discuss the specific impact of de-regulated mitochondrial calcium on the physiological network and the function of plant mitochondria.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua17122 [16]
Lien vers le document en ligne	http://www.biotech.uni.wroc.pl/aktualnosc/9th-international-conference- [17]...

Liens

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- [3] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=28524>
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