

S11. CHLAMYDOMONAS REINHARDTII MITOPROTEOME ADAPTATION IN RESPONSE TO INACTIVATION OF THE ENERGY-DISSIPATING ALTERNATIVE OXIDASE 1 BY RNA INTERFERENCE.

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The mitochondrial alternative oxidase (AOX) is an ubiquinol-oxygen oxidoreductase which catalyses ubiquinol oxidation by molecular oxygen. Thus AOX competes for electrons with the cytochrome pathway, generating an electron partitioning and decreases the oxidative phosphorylation yield. AOX from the unicellular green alga *Chlamydomonas reinhardtii* is encoded by two genes, the AOX1 gene being much more transcribed than AOX2. In addition, the expression of the AOX1 gene is down-regulated by ammonium and stimulated by nitrate. In this work, we performed a comparative proteomics approach (2D-DIGE) to study the effects of the inactivation of AOX1 by RNA interference on the mitochondrial proteome of *Chlamydomonas reinhardtii* cultivated on nitrate. Our results indicate that 88 protein spots are statistically up or down-regulated in our experimental conditions. Interestingly, observed up and down-regulations were related to proteins involved in protection against ROS and RNS. Moreover, other important enzymes of the main mitochondrial metabolic pathways (Krebs cycle, amino-acid metabolism and several subunits of the mitochondrial respiratory chain complexes) were also regulated indicating the important impact of the alternative oxidase expression in oxidative stress defence as well as in metabolic turnover.