

September 01-03, 2015 Valencia, Spain

5th International Conference on **Proteomics & Bioinformatics**

Oxidative stress dependent regulation of DJ-1: An interactomic point of view

Bruno Manadas, Sandra Anjo, Matilde Melo, Liliana Loureiro, Lucia Sabala, Vera M Mendes, Tiago Faria, Pedro Castanheira, Rui Brito and Mario Graos University of Coimbra, Portugal

D^{J-1} protein, a Parkinson's disease (PD) associated protein has already proved to be involved in neuroprotection against oxidative stress. Moreover, evidences suggest that DJ-1 is also regulated by oxidative stress and in fact its oxidized state is considered its active form. Therefore by providing a comprehensive characterization of DJ-1 dynamic interactome under oxidative stress conditions, this work elucidates the mechanisms through which DJ-1 exerts its neuroprotective role in response to oxidative challenges. Using affinity purification combined with SWATH-MS (AP-SWATH), a dynamic interactomic screening of endogenous DJ-1 was performed to identify and quantify DJ-1 interactions under resting and oxidative stress conditions. The main mechanisms of DJ-1 action were predicted by monitoring the interactions changes and highlight groups of proteins with similar behavior. To establish the importance of DJ-1 stress regulation in the newly interactions/mechanisms identified, pull-down assays of DJ-1 recombinant forms-WT and mutants that mimics different DJ-1 oxidative states-were also performed. Finally, the stress dependent regulation of DJ-1 binding partners were identified, pointing to new mechanisms for DJ-1-mediated neuroprotection and also the dynamics and the regulation of these interactions was characterized. Thus, this work largely contributed to the elucidation of the DJ-1 neuroprotective mechanisms. Furthermore, many of the proteins identified are well established in distinct cellular functions implicated in PD ultimately contributing also to a better understanding of the disease.

bmanadas@gmail.com