

## Nuclear phospholipase C $\beta$ 1 interactome: a morphological and proteomic approach

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Inositide-dependent phospholipase C $\beta$ 1 (PI-PLC $\beta$ 1b) has two isoforms generated by alternative splicing (PI-PLC $\beta$ 1a and PI-PLC $\beta$ 1b). In murine erythroleukemia (MEL) cells both the isoforms are present within the nucleus, but PI-PLC $\beta$ 1b is exclusively nuclear. Our group has demonstrated that PI-PLC $\beta$ 1 nuclear localisation is crucial for its function, although the mechanism by which PI-PLC $\beta$ 1 is imported into the nucleus has never been carefully investigated.

The purpose of the present study was to get more insights on the protein interactome of PI-PLC $\beta$ 1b, namely the proteins present in the nucleus. Immuno-affinity purification coupled with tandem mass spectrometry analysis have been used to purify and identify PI-PLC $\beta$ 1b interaction binding partners from Friend's erythroleukemia isolated nuclei. Gene ontology and protein-protein interaction network were performed to analyze data. Some interactions were already characterized, such as the binding with the splicing factor SRp20 and the lamin B. Among the proteins identified, the binding of eEF1A and prohibitin 2 with PI-PLC $\beta$ 1b was confirmed by western blot analysis. Of particular interest was the identification of importin  $\alpha$ , importin  $\beta$ 1 and Ran, which interact with PI-PLC $\beta$ 1b. These proteins are believed to be involved in the import mechanism from the cytoplasm to the nucleus. Further analysis by overexpressing both wild type and cytoplasmic mutant of PI-PLC $\beta$ 1, suggests that importin  $\beta$ 1 is responsible for the localisation of PI-PLC $\beta$ 1b in the nucleus, giving new insight into the mechanism of trafficking of this signaling molecule.

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