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NUCLEAR PORE COMPLEX PROTEINS REDISTRIBUTE TOWARDS NUCLEAR INTERIOR AFTER CELL CYCLE ARREST INDUCED BY HISTONE DEACETYLASE INHIBITORS

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Nucleoporins (Nups) are known as the main components of the nuclear pore complex (NPC) and were considered as mere structural proteins embedded in the nuclear membrane. Nevertheless, plenty investigations during the recent decade have shown its relevance in various functions apart of its role in transport and NPC constitution, such as RNA export, DNA replication and transcription, DNA repair and chromosome segregation among others. Particularly, the nuclear pore basket proteins, like Tpr and Nup153, and FG-Nups as Nup98 play a key role in all this new brand of functions. Moreover, NPC and other components of the nuclear envelope as the nuclear lamina interact with large regions of both euchromatin and heterochromatin. This interaction regulates the distribution of chromosome territories and relies as well on the epigenetic state of DNA. In this work, different Histone Deacetylase Inhibitors (HDACi) were used in several cell lines to induce a state of DNA hyperacetylation and study the behavior of the mentioned Nups in this scenario. Our results suggest that Tpr, Nup153 and Nup98 suffer a translocation from the nuclear pore towards the nuclear interior and accumulate in aggregates only in the population of cells arrested in G0/G1 phase of the cell cycle after HDACi treatment, meanwhile the G2/M population preserved the nuclear rim label. Although further experiments are needed, this result may indicate a possible role of nucleoporins in the early events of DNA replication and the initialization of the S phase of cell cycle.