

The role of protein TPR in the integrity of the nuclear lamina

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The organization of nuclear lamina at the periphery of the nucleus is crucial for many biological functions namely chromatin organization, regulation of transcription or distribution of nuclear pore complexes. Both, A- and B-type, lamins are also involved in the mechanical properties of the cell nucleus. Lamins provide mechanical stiffness and maintain the shape and integrity of the nuclear envelope. Here we show that nucleoporin TPR that along with Nup153 forms the nuclear pore basket, interacts with lamin B1 and lamin A/C. Depletion of protein TPR in cells leads to alterations in lamin networks organization. Further, lower level of TPR in cells results in changes in mRNA and protein levels of both lamins. To demonstrate the role of TPR in transcription regulation of lamins, we induced lamin expression by mechanical cell stretching. Subsequently we measured the mRNA level of both lamins in TPR depleted cells during mechanical stress response. Together, these data suggest that nucleoporin TPR is involved in the maintenance of the integrity of the nuclear envelope.

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