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M-2. The mechanisms of YB-1 nucleocytoplasmic translocation

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The Y-box binding protein 1 (YB-1) is a DNA and RNA binding protein that performs numerous functions both in the cytoplasm and in the nucleus. Its nuclear localization has been observed at the G1/S cell cycle boundary [1], in stress conditions of various types [2-5], and under adenovirus infection [6]. The sequence of YB-1 contains a nuclear localization signal (NLS) [7] which is responsible for its nuclear translocation. The YB-1 NLS is recognized by transportin 1 [8] and classified with signals of the PY-NLS type characterized by the presence of an N-terminal positively charged or hydrophobic cluster, the residue R, and the C-terminal dipeptide PY. For better understanding of NLS functioning, we generated a few forms of YB-1 with mutations in its NLS region, where major structural elements of NLS were modified. We compared subcellular localization of the WT YB-1 with that of its mutant forms both in normal growth conditions and with stimulation of its translocation to the nucleus. Methods: The mutations were performed by site-directed mutagenesis. Transfection of eukaryotic cells was made according to the manufacturer's recommendations. Results: The comparison of subcellular localization of WT YB-1 with that of its mutant forms showed that only the removal of the entire NLS resulted in the loss of

the nuclear translocation ability of YB-1. The removal or replacement of separate structural elements of the NLS did not prevent YB-1 translocation to the nucleus either in normal growth conditions or under stimulated translocation. Conclusions: There is increasing evidence in the literature that some PY-NLS found in various proteins interact with transportin 1. Besides, transportin 1 can recognize PY-NLS lacking the dipeptide PY [9-12]. The YB-1 NLS has a highly charged N-terminal cluster which presumably makes the greatest contribution to the interaction with transportin 1.

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M-3. HIV 1 Tat induces cell type specific expression of host genes in B cells

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