
BACKGROUND: Human cell types respond differently to infection by human immunodeficiency virus (HIV). Defining specific interactions between host cells and viral proteins is essential in understanding how viruses exploit cellular functions and the innate strategies underlying cellular control of HIV replication. The HIV Rev protein is a post-transcriptional inducer of HIV gene expression and an important target for interaction with cellular proteins. Identification of Rev-modulating cellular factors may eventually contribute to the design of novel antiviral therapies. RESULTS: Yeast-two hybrid screening of a T-cell cDNA library with Rev as bait led to isolation of a novel human cDNA product (16.4.1). 16.4.1-containing fusion proteins showed predominant cytoplasmic localization, which was dependent on CRM1-mediated export from the nucleus. Nuclear export activity of 16.4.1 was mapped to a 60 amino acid region and a novel transport signal identified. Interaction of 16.4.1 with Rev in human cells was shown in a mammalian two-hybrid assay and by colocalization of Rev and 16.4.1 in nucleoli, indicating that Rev can recruit 16.4.1 to the nucleus/nucleoli. Rev-dependent reporter expression was inhibited by overexpressing 16.4.1 and stimulated by siRNAs targeted to 16.4.1 sequences, demonstrating that 16.4.1 expression influences the transactivation function of Rev.
CONCLUSION: These results suggest that 16.4.1 may act as a modulator of Rev activity. The experimental strategies outlined in this study are applicable to the identification and biological characterization of further novel Rev-interacting cellular factors.