

RNA interference-mediated URG4 gene silencing diminishes cyclin D1 mRNA expression in HepG2 cells

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Genet. Mol. Res. 9 (3): 1557-1567 (2010)

Received May 8, 2010

Accepted June 28, 2010

Published August 10, 2010

DOI 10.4238/vol9-3gmr872

ABSTRACT. Up-regulated gene 4 (URG4), stimulated by HBxAg, is a novel gene located on chromosome 7 (7p13). The full-length URG4 clone is 3.607 kb and encodes a polypeptide of 922 amino acids, with a molecular weight of 104 kDa (GeneID: 55665). It promotes cell growth, growth factor-independent survival, and anchorage-independent growth in HepG2 cells, and it accelerates tumor formation in nude mice. Hence, URG4 may be a natural effector of HBxAg and a putative oncogene that contributes to multi-step hepatocarcinogenesis. Cyclin D1 is frequently over-expressed in hepatocellular carcinoma, exhibiting a number of malignant phenotypes. We found that down-regulation of URG4 through RNA interference-mediated silencing suppressed cell proliferation in HepG2 cells. Over-expression of URG4 up-regulated cyclin D1 mRNA expression, whereas RNA interference-mediated URG4 silencing

diminished cyclin D1 mRNA expression in HepG2 cells. The data suggest that URG4 may play an important role in the development of hepatocellular carcinoma by partially regulating the expression of cyclin D1 and has potential for use as a therapeutic target for hepatocellular carcinoma.

Key words: URG4; Cyclin D1; Carcinogenesis