Mouse model for mutant allele of the cell cycling inhibitor BARA in mice.

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Technology description

A Research tool for use in the study of the cell cycle, growth hormone production, and cancer associated with pRB suppression.

The invention is a research tool relating to the function of BARA(β-subunit Associated Regulator of Apoptosis)/LIN-9 downstream of CDK4 expression. BARA inhibits cell proliferation via collaboration with tumor suppressor Retinoblactoma protein (pRB). BARAΔ84/Δ84, the shortened version of BARA with the first 84 amino acids eliminated from the coding sequence of the gene, can be used in research of the cell cycle, growth hormone production, as well as cancer associated with pRB suppression.

It has been proposed that C. elegans LIN-9 functions downstream of CDK4 in a pathway that regulates cell proliferation.

At UIC the inventor found that mammalian BARA (β- subunit Associated Regulator of Apoptosis)/LIN-9 is a predominantly nuclear protein that inhibits cell proliferation. Furthermore, it was found that BARA/LIN-9 acts downstream of cyclin D/CDK4 in mammalian cells because its antiproliferative effect is partially blocked by coexpression of cyclin D1, and also because the mutant BARA form lacking the first 84 amino acids (BARAΔ84/Δ84) restores fertility, prevents onset of diabetes and reverses low mouse body size associated with mice null for cdk4.

Notably, mutation of BARA/LIN-9 restores expression of the E2F target genes in CDK4 null MEFs, indicating that the wild-type protein plays a role in the expression of genes required for the G1/S transition.

Application area

A research tool for investigation of the mammalian gene BARA in a shortened version which has been shown to reverse the cell cycle defects of CDK4 KO mice.

Research tool for exploring the cell cycle effects of BARA.

Research tool for investigating the collaboration of BARA with pRB to suppress cell cycle with implications in cancer.

Advantages

Mouse model of BARA gene for use in research in cancer.

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