# The Efficacy of AarF Domain-Containing Kinase 1 Knockout in Reducing the Proliferation of Hepatocellular Carcinoma Cells

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Hepatocellular carcinoma (HCC) is the most prominent type of liver cancer around the world, and it ranks as the fourth leading cause of cancer death worldwide with these rates only rising. Despite the growing prevalence of this disease, fewer mutations can be targeted even though the molecular pathogenesis of HCC has already been identified. There is an urgent need to identify new potential targets to this growing problem, and recognizing new oncogenic activations is one of the strategies for HCC management. I hypothesize that when AarF domain-containing kinase 1 expression is eliminated in hepatocellular carcinoma cells, the cell cycle progression will be affected leading to a decreased cell proliferation rate. One potential target of hepatocellular carcinoma is AarF domain-containing kinase 1 or ADCK1, a relatively unstudied putative kinase. When its expression was eliminated in SNU449 cells, there was a stark decrease in the proliferation rates. The control cells had a phase object confluence of 21% while the 2G6 and 1D8 knockout cell lines had confluences that were 90% and 60% lower respectively. Additionally, the wound healing assay demonstrated that the migration rates and metabolism are much slower for the knockout cells. Furthermore, the cell cycle analysis showed statistically significant differences between the control cells and the knockout cells in most phases of the cell cycle. These results indicate that the knockout cells show dramatically reduced growth and mobility of HCC. To conclude, ADCK1 elimination in SNU449 cells is effective at reducing the proliferation of hepatocellular carcinoma cells.

**Awards Won:**