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Does AAV-based gene delivery cause liver cancer? The debate heats up

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Liver cancer can be triggered by mutations in cancer driver genes resulting from the insertion of adeno-associated virus (AAV) vectors used to deliver therapeutic genes, although this tumor-inducing role of AAV remains highly controversial. Recently published evidence of AAV-associated hepatocellular carcinoma was previously re-examined in *Human Gene Therapy*, and a new article in the Journal strongly challenges the re-interpreted data.

Jean-Charles Nault, Jessica Zucman-Rossi, INSERM, and coauthors, strongly disagree with the re-interpretation of their research, originally published in Nature Genetics, which appeared in a recent article by Kenneth Berns and colleagues in *Human Gene Therapy*. In the current article, "AAV2 and Hepatocellular Carcinoma", Nault et al. reaffirm their findings that insertional mutagenesis caused by AAV2 gene delivery vectors contribute to a subset of liver cancer cases in rare patients. The authors also state, "we fully disagree with Berns and colleagues, who claimed a protective role for AAV infection after re-interpreting our results," emphasizing that there is no good evidence to support a tumor suppressive effect of AAV2 in human liver cells or human cancers in general.

"Our ultimate goal as translational scientists is to develop new therapies that are both safe and effective," says Editor-in-Chief Terence R. Flotte, MD, Celia and Isaac Haidak Professor of Medical Education and Dean, Provost, and Executive Deputy Chancellor, University of Massachusetts Medical School, Worcester, MA. "It is crucial that scientists can engage

in such vigorous debates, which in turn generate interest in future studies to clarify whether or not rAAV-based gene therapy holds significant cancer risk to patients. We are pleased that *Human Gene Therapy* can provide the forum for such debates."

More information: Jean-Charles Nault et al, AAV2 and Hepatocellular Carcinoma, *Human Gene Therapy* (2016). DOI: 10.1089/hum.2016.002

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