

Original Article

Subject Category: Vector Engineering and Delivery

Molecular Therapy (2007) **15** 12, 2140–2145. doi:10.1038/sj.mt.6300315**Adenoviruses 16 and CV23 Efficiently Transduce Human Low-passage Brain Tumor and Cancer Stem Cells**Johan Skog¹, Karin Edlund¹, A Tommy Bergenheim² and Göran Wadell¹¹Department of Virology, Umeå University, Umeå, Sweden²Department of Neurosurgery, University Hospital, Umeå, SwedenCorrespondence: Johan Skog, Department of Virology, Umeå University, Umeå SE-901 85, Sweden. E-mail: johan.skog@climi.umu.se

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Abstract

Most clinical protocols involving adenovirus (Ad) vectors for gene therapy use a vector based on serotype 5 (Ad5). We believe that this serotype is not suitable for all gene therapy applications and that alternative vectors based on other serotypes should be developed. We have compared the ability of Ad5, Ad11p, Ad16p, and a chimpanzee Ad (CV23) to infect human low-passage brain tumor cells as well as primary glioma cells sorted into a CD133⁺ and CD133⁻ population. Cancer stem cells have been shown to reside in the CD133⁺ population of cells in human glioma tumors and they are of considerable interest in glioma therapy. Ad16p and CV23 infected the low-passage brain tumor cell lines and also the CD133⁺ and CD133⁻ primary tumor cells most efficiently. Interestingly, as the passage number of the cells increased, the infection capacity of Ad5 increased significantly, whereas this was not seen for CV23. To ensure the therapeutic effect of Ad vectors on brain tumors, the vector must be capable of addressing both the CD133⁺ cancer stem cells and the CD133⁻ cells of the tumor. In particular, Ad16 and CV23 are meeting this challenge.

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