

Cancer-fighting viruses may actually promote brain tumor growth

Jian Zang
Min-Hua Zheng
Xiu-Li Cao
Yi-Zhe Zhang
Yu-Fei Zhang
Xiang-Yu Gao
Yuan Cao
Mei Shi
Hua Han
Liang Liang

Video Byte

Keywords: virus, cancer, adenoviruses, glioma stem cells, tumorspheres, tumor growth, TLR9, NEAT1, STAT3, Cell Communication and Signaling

Posted Date: November 11th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-106617/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Viral infection can be devastating. But some viruses are an important part of therapies for fighting diseases like cancer. Adenoviruses are one example – they deliver deadly payloads to cancer cells without harming healthy tissue. Or do they? A recent study suggests that adenovirus infection could promote the formation of glioma stem cells, the self-renewing cells that keep brain tumors alive and spreading. Experiments on glioma cells derived from human patients showed that adenovirus infection promoted the formation of tumorspheres, solid, spherical formations that develop from self-renewing glioma stem cells. When transplanted into mice grafted with glioma tumors, these formations promoted tumor growth. A closer look revealed three signaling molecules that adenoviruses activate during this process: TLR9, a pro-inflammatory receptor, NEAT1, a non-coding RNA frequently overexpressed in human tumors, and STAT3, a protein linked to tumor formation. Future experiments could clarify the molecular chain of events triggered by adenoviruses and help clinicians and patients weigh the risks and benefits of adenovirus-based therapies.