The Antiviral Function of XAF1 during Immune Response

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During viral infections, the host's innate immune system is the first line of defense to prevent viral infection. Because it directs the subsequent development of the adaptive immune response, innate immunity is critical for host health. XAF1 is a proapoptotic protein which is frequently downregulated in cancer cells. In addition, it is an interferon-inducible gene that is highly upregulated following infection. The objective of this study was to determine if XAF1 has antiviral activity, by using CRISPR-Cas9 to delete the Xaf1 gene. Also, finding the role of XAF1 could provide insight into its function as an apoptotic regulator of p53. A series of assays was performed in order to compare the viral resistance of the two cell lines, wild-type and knockout. Furthermore, the localization of the virus was compared using immunofluorescence confocal microscopy. Results from plaque assays showed that the XAF1 knockout cell line was more susceptible to infection, and immunofluorescence images showed the formation of giant nuclei in the VSV-infected mutant cell line. Results also showed the downregulation of p53 in absence of XAF1, suggesting that XAF1 regulates p53 activation during VSV infection. Understanding the function of XAF1 may open new doors to finding targets for cancer treatment and viral infection.

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