Avian Paramyxovirus Serotype 4 (APMV-4) Promotes Greater Rates of Apoptotic Cell Death & Stimulated Immune Responses in Malignant Melanoma and Relapse Cancers with Respects to Newcastle Disease Virus (NDV): The Characterization of a Novel Oncolytic Virus

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Based on prior studies, Avian Paramyxovirus Serotype 4 (APMV-4) has shown a rapid apoptotic cell death response within tumors in complement with the upregulation of stimulated immune signals that have allowed it to be considered for an oncolytic virus classification. In this study, the goal was set to further characterize the virus and officially name it as an oncolytic virus. Murine melanoma (both post-remission relapse and wild-type cells) along with wild-type squamous murine fibroblasts were utilized. Cells were infected with APMV-4 at a MOI of 1 and 10 pfu/cell respectively, along with Newcastle Disease Virus (NDV) for comparison purposes. The MTT Cell Viability Assay, Western Blotting assay, rt-QPCR screening, and fluorescence microscopy methods were utilized to further simulate APMV-4's oncolytic capacity. Preliminary data indicates that APMV-4 is able to induce a greater cell death response in tumor cells at a MOI of 10 when compared to NDV responses. Furthermore, APMV-4 infected cancer cells showed the upregulation of the following immune signals: STAT1, ISG-15, IFN-B, IL-1B, & IL-6. The upregulation of these immune signals when compared to NDV infected cells displays a selective advantage in APMV-4, as APMV-4 displays the ability to not replicate in wild-type squamous cells as opposed to cancer cells. Lastly, APMV-4 is able to selectively replicate in tumor cells and inflict active F-protein synthesis in its virions, allowing it to replicate in any wild-type tumor it infects.

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