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# VSV-hIFNbeta-NIS

National Cancer Institute

## Source

*National Cancer Institute. VSV-hIFNbeta-NIS. NCI Thesaurus. Code C131580.*

A recombinant, replication competent form of the oncolytic RNA virus vesicular stomatitis virus (VSV), based on the Indiana strain of VSV, that is genetically engineered to express the genes for the human cytokine interferon beta (IFNbeta) and the human thyroidal sodium-iodide symporter (NIS), with potential oncolytic and imaging activities. Upon intravenous administration, VSV-hIFNbeta-NIS is preferentially taken up by tumor cells, resulting in tumor cell infection, viral replication and a direct virus-mediated cytolytic effect against the infected tumor cells. IFN-mediated signaling is defective in tumor cells and tumor cells are unable to exert an anti-viral response against VSV. As normal, healthy cells secrete and respond normally to IFNbeta and are able to activate IFN-mediated anti-viral pathways, the expressed IFNbeta from the VSV-infected tumor cells helps protect normal cells from VSV infection. Upon subsequent administration of certain isotope-containing imaging agents, NIS expression by the infected tumor cells allows visualization and tracking of VSV biodistribution, and analysis and quantification of VSV-infected tumor cells by positron emission tomography (PET). Also, upon subsequent administration of the radioisotope iodine I 131 (I131), I131 can be taken up by NIS and allows for a cytotoxic dose of radiation to accumulate in the NIS-expressing VSV-infected tumor cells, which also leads to tumor cell death.