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Rodent Protoparvoviruses: Identifying the Amino Acid Residues Involved in Oncotropism and Oncolysis

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Oncolytic protoparvoviruses are viruses that safely target cancers, spread in, and kill tumor cells, without causing damage to normal tissue. Oncolytic viruses are dependent on the tumor cell machinery for replication. This is because tumor cells have evolved mechanisms to suppress host responses that limit viral replication. In addition, signaling pathways that promote the growth of tumor cells, also promote the growth of viruses. The idea of using oncolytic viruses to treat tumors has been ongoing. And recent studies have demonstrated the use of *rodent protoparvovirus1* species in cancer therapy. Specifically, it was shown that H-1PV, minute virus of mice, and LuIII suppress cancer proliferation and do not lead to disease in humans. These viruses target both murine and human tumor models but are specific to tumor cells. The VP2 capsid protein of *rodent protoparvoviruses* has been identified to be involved in oncotropism and to contain amino acid residues which differential the cell killing potential of each rodent virus. Furthermore, specific amino acids at certain residue positions can confer enhanced oncolysis. With this knowledge, we sought to carry out phylogenetic comparison of the VP2 amino acid sequences of these viruses with known and unknown oncolytic potential. We compared the amino acid sequences and structures or 3D modes of these *rodent protoparvoviruses* to gain insight into their oncolytic determinants. Our observations will be presented.