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THY-1 Cell Surface Protein and Human Cytomegalovirus Infection

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ABSTRACT

This research project is to investigate the role of a cell surface protein, THY-1, as an entry mediator for Human Cytomegalovirus (HCMV) infection. Previous research suggested that HCMV attaches to THY-1 on the host cell surface through virus encoded glycoprotein gB. The glycoproteins are located on the surface of virus particles thus initiating entry and infection. The specific question is to determine if the presence of a soluble form of THY-1 protein (sTHY-1) during the onset of infection would impair HCMV infectivity, based on the hypothesis that sTHY-1 would interrupt the interaction between the infectious virion and the target cells by competing with authentic cell surface THY-1 for binding to gB.

The experimental approach is to prepare a plasmid encoding sTHY-1, to introduce it into mammalian cells by transfection to express the protein, to purify the sTHY-1, and to test the purified protein using Western blot and blocking of infection assays.

HCMV is a herpes virus transmitted through saliva, urine, or other body fluids. Congenital HCMV occurs when HCMV is passed from a pregnant mother to her fetus. Many people encounter HCMV in their lifetime and according to the Centers for Disease Control (CDC), 50 to 80 percent of adults who are 40 or older are infected with HCMV. For individuals with a healthy immune system, HCMV produces mild illness, and for immunocompromised individuals, HCMV has a high rate of reactivation and can cause serious disease.

Key words: Cytomeaglovirus, Glycoprotein, THY-1

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