



THY-1 Cell Surface Protein and Human Cytomegalovirus Infection

Journal of Health Disparities Research and Practice

Volume 9
Issue 5 Special Issue - NIDDK STEP UP

Article 76

© Center for Health Disparities Research, School of Public Health, University of Nevada, Las Vegas

2016

THY-1 Cell Surface Protein and Human Cytomegalovirus Infection

Carson Peters

Dr. Qingxue Li , *National Institute of Allergy and Infectious Diseases (NIAID)*

Dr. Jeffery Cohen , *National Institute of Allergy and Infectious Disease (NIAID)*

Follow this and additional works at: <https://digitalscholarship.unlv.edu/jhdp>



Part of the [Bilingual, Multilingual, and Multicultural Education Commons](#), [Community College Leadership Commons](#), [Higher Education Commons](#), [Immune System Diseases Commons](#), [Public Health Commons](#), [Translational Medical Research Commons](#), and the [Virus Diseases Commons](#)

Recommended Citation

Peters, Carson; Li, Dr. Qingxue; and Cohen, Dr. Jeffery (2016) "THY-1 Cell Surface Protein and Human Cytomegalovirus Infection," *Journal of Health Disparities Research and Practice*: Vol. 9: Iss. 5, Article 76. Available at: <https://digitalscholarship.unlv.edu/jhdp/vol9/iss5/76>

This Article is protected by copyright and/or related rights. It has been brought to you by Digital Scholarship@UNLV with permission from the rights-holder(s). You are free to use this Article in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Article has been accepted for inclusion in Journal of Health Disparities Research and Practice by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.

THY-1 Cell Surface Protein and Human Cytomegalovirus Infection

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.

Keywords

Cytomeaglovirus; Glycoprotein; THY-1



Journal of Health Disparities Research and Practice
Volume 9, Special Edition 1, Summer 2016, pp. 111
© 2011 Center for Health Disparities Research
School of Community Health Sciences
University of Nevada, Las Vegas

THY-1 Cell Surface Protein and Human Cytomegalovirus Infection

Carson Peters

Dr. Qingxue Li, Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases (NIAID)

Dr. Jeffrey Cohen, Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases (NIAID)

Coordinating Center: Stanford University

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

ACKNOWLEDGEMENTS

The STEP-UP HS program is supported by the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health, Grant number: R25DK078382.