

Recombinant Human Immunodeficiency Virus GP41 Protein [HIV-1/Clade B (IIIB)]

Cat. No. HUM-401 **Lot. No.** (See product label)

SPECIFICATION

Product Overview Recombinant HIV gp41 protein is produced in E. coli and fused with β -galactosidase.

Background

Human immunodeficiency virus (HIV) is a retrovirus (genus Lentivirus) with a single-stranded, positive-sense RNA genome. Upon entry of the target cell, the viral RNA genome is converted to double-stranded DNA by a virally encoded reverse transcriptase that is present in the virus particle. This viral DNA is then integrated into the cellular DNA by a virally encoded integrase allowing the genome to be transcribed. Once the virus has infected the cell, two pathways are possible: either the virus becomes latent and the infected cell continues to function, or the virus becomes active and replicates, and a large number of virus particles are liberated to infect other cells. Infection with HIV leads to a condition in which the immune system begins to fail, leading to opportunistic infections. HIV primarily infects cells in the human immune system including CD4 T cells, macrophages and dendritic cells. Infection subsequently results in low levels of CD4 T cells via direct viral killing of infected cells, increased rates of apoptosis in infected cells and killing of infected CD4 T cells by CD8 cytotoxic lymphocytes that recognize infected cells. When CD4 T cell numbers decline below a critical level, cell-mediated immunity is lost, and the body becomes progressively more susceptible to opportunistic infections.

Gp41 also known as glycoprotein 41 is a subunit of the envelope protein complex of human immunodeficiency virus (HIV). It is a transmembrane protein that contains several sites within its ectodomain that are required for infection of host cells and as a result it has received much attention as a potential target for HIV vaccines. Essentially, gp41 mediates fusion between viral and cellular membranes (Chan et al.,

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1997). Gp41 is coded with gp120 as one gp160 by the env gene of HIV. Gp160 is then extensively glycosylated and proteolytically cleaved by a host cellular protease, furin. The high glycosylation of the env coded glycoproteins allows them to escape the human body's immune system. Gp41 is less glycosylated than gp120 and more conserved (less prone to genetic variations). Once gp160 has been cleaved into its individual subunits, the subunits are then associated non-covalently on the surface of the viral envelope.

When they are non-covalently bound to each other Gp41 and gp120 form the envelope spike complex, composed of a heterotrimer of three gp41 and three gp120. The complex is responsible for the attachment, fusion, and ultimately the infection of host cells. Gp120 sits on the surface of the viral envelope and gp41 is the transmembrane portion of the spike complex with part of the glycoprotein buried within the viral envelope. The membrane-proximal external region (MPER) is a highly conserved region of gp41 subunit near the viral envelope surface, and plays a key role in membrane fusion. It is seen as an attractive vaccine target using broadly neutralizing antibodies (bNAbs) or non-neutralizing, yet protective, antibodies (Liu et al., 2018).

Formulation	Stored in 10 mM Na ₂ CO ₃ , 10 mM EDTA, 14 mM β-ME, 0.05% Tween 20.
Applications	Suitable for use in ELISA.
Notes	This product is intended for research and manufacturing uses only. It is not a diagnostic device. The user assumes all responsibility for care, custody and control of the material, including its disposal, in accordance with all regulations.
Type	Recombinant
ClassID 1	Infectious Disease



GENE INFORMATION

Synonyms	HIV GP41 [HIV-1/Clade B (IIIB)]
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