Recombinant HIV GP120 Protein, His-tagged

Cat. No. HUM-406 **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Recombinant HIV-1 GP120 protein, produced in mammalian HEK293 cells with 6×His.
Tag	His
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. Human Immunodeficiency Virus (HIV) exists in two distinct types, HIV type 1 (HIV-1) and HIV type 2 (HIV-2). The predominant virus worldwide is HIV-1, whilst HIV-2 is geographically restricted to West Africa, and is less infectious and causes slower

Tel: 1-631-559-9269 1-516-512-3133
Email: info@creative-biomart.com Fax: 1-631-938-8127
45-1 Ramsey Road, Shirley, NY 11967, USA

	disease progression. HIV-1 viruses may be further divided into groups, being M, N, O and P. The HIV-1 group M viruses predominate and are responsible for the AIDS pandemic. Within the M group of HIV-1 there are a number of genetically distinct sub-types (also known as clades). Different subtypes can also combine genetic material to form a hybrid virus or "circulating recombinant form (CRF)". Subtype B is the most common in the Americas and Western Europe, whilst subtype C is the predominant form in Africa and India. Most research has been carried out into subtype B, although it accounts for only around 12% of infections worldwide. HIV GP120 protein (or gp120) is the name of the glycoprotein which forms the spikes sticking out of a HIV virus particle. It is encoded by the HIV env gene, which is around 2.5 kb long and codes for around 850 amino acids. The primary env product is the protein GP160, which gets cleaved to GP120 (~480 amino acids) and GP41 (~345 amino acids) in the endoplasmatic reticulum by the cellular protease furin (Hallenberger et al., 1992). GP120 is essential for virus entry into cells as it plays a vital role in attachment to specific cell surface receptors. These receptors are DC-SIGN, Heparan Sulfate Proteoglycan and a specific interaction with the CD4 receptor, particularly on helper T-cells. Binding to CD4 induces the start of a cascade of conformational changes in GP120 and GP41 that lead to the fusion of the viral membrane with the host cell membrane. Three GP120s, bound as heterodimers to a transmembrane glycoprotein, GP41, are thought to combine in a trimer to form the envelope spike, which is involved in virus-cell attachment. Approximately 50% of the mass of HIV GP120 protein is due to glycosylation, the high level of which may prevent GP120 from being recognised by the human immune response. GP120 has been a long running target for HIV vaccine research but its chemical and structural properties have made it difficult for antibodies to bind to it. However, primate studies have demonstrated that recombinant GP120 can elicit protective immunity against a homologous strain of HIV-1 (Berman et al., 1990).
Formulation	DPBS pH7.4

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Freezing	Can be frozen, but avoid multiple freeze/thaw cycles.
Storage	Short Term Storage: +2 centigrade to +8 centigrade Long Term Storage: -80 centigrade
Concentration	2 mg/mL
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 GP120 [HIV-1/Clade A (KNH1144)]

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