Miltenyi Biotec

Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK)

Contents

1. Description

Products Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK) or Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK)-Biotin.

Productname	Content	Order no.
Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK)	10 µg	130-130-626
Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK)	50 µg	130-130-628
Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK)-Biotin	25 µg	130-130-417

Functional testing Functionality was tested in a flow assay by analyzing the binding of Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK)-Biotin to ACE2-expressing cells.

Primary structure Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK): Single glycosylated polypeptide chain (1227 amino acid residues) without N-terminal methionine. C-terminal His-tag and C-terminal AviTag™.

Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK)-Biotin: Monobiotinylated, glycosylated polypeptide chain (1227 amino acid residues) without N-terminal methionine. C-terminal His-tag and C-terminal AviTag.

Molecular mass 136.1 kDa.

Source Produced in human embryonic kidney cells.

Product format Lyophilized from a filtered (0.2 µm) buffer solution.

Stabilizer Mannitol and trehalose.

Purity >90% as determined by SDS-PAGE analysis.

Endotoxin level Low endotoxin (<0.25 EU/µg protein) as determined by Limulus Amebocyte Lysate (LAL) assay.

Storage Lyophilized Recombinant SARS-CoV-2 Spike Prot B.1.1.529/BA.1 should be stored at –20 °C. The expiration date is indicated on the vial label. Upon reconstitution aliquots should be stored at –20 °C or below. Avoid repeated freeze-thaw cycles.

Reconstitution It is recommended to reconstitute lyophilized Recombinant SARS-CoV-2 Spike Prot B.1.1.529/BA.1 with deionized, sterile-filtered water to a final concentration of 0.02–0.25 mg/mL in a minimal volume of 200 µL.

1.1 Background information

The SARS-CoV-2 spike glycoprotein (S) mediates the entry of the virus into target cells via its interaction with the angiotensin-converting enzyme 2 (ACE2) receptor, thereby initiating the infection. It forms a homotrimeric structure on the surface of the SARS-CoV-2 virus and represents the major target for diagnostic and therapeutic agents. The ectodomain of the S glycoprotein comprises the N-terminal S1 subunit, including the receptor binding domain (RBD) and the C-terminal S2 subunit. The ectodomain spans from aa12 to aa1213 followed by a transmembrane helix beginning at aa1214–aa1234. The C-terminus of the native protein is formed by a cytoplasmic domain spanning aa1235–aa1273.

The SARS-CoV-2 mutant strain B.1.1.529, also known as Omicron variant, was first identified during the Covid-19 pandemic in Botswana/South Africa in November 2021. Due to increased transmissibility and substantial immune evasion it spread rapidly around the globe. The B.1.1.529 lineage and its sublineages are the most mutated variants of the SARS-CoV-2 virus known so far. The BA.1 lineage is defined by 30 amino acid substitutions (A67V, T95I, G142D (already known from B.1.617.2-Delta), L212I, G339D, S371L, S373P, S375F, K417N (already known from B.1.351-Beta), N440K, G446S, S477N, T478K (already known from B.1.617.2-Delta), E484A, Q493R, G496S, Q498R, N501Y (already known from B.1.1.7-Alpha, B.1.351-Beta, and P.1-Gamma), Y505H, T547K, D614G (already known from B.1), H655Y, P681H (already known from B.1.1.7-Alpha), N679K, N764K, D796Y, N856K, Q954H, N969K, L981F), 6 amino acid deletions (H69del, V70del (already known from B.1.1.7-Alpha), V143del, Y144del, Y145del, N211del), and one insertion (ins214EPE) in the spike protein. Preliminary evidence suggests an increased risk of reinfection with this variant, as compared to other variants of concern.

The Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK) protein covers the ectodomain of the viral surface protein including amino acids V16 to K1211. It was engineered to contain the stabilizing proline substitutions at position K986P and V987P. The native sequence of the Furin cleavage site (RRAR at residues 682–685) was substituted by GSAG to further increase recombinant protein stability. The protein is extended at its C-terminus with a His-tag and an AviTag. Recombinant SARS-CoV-2 Spike-Prot B.1.1.529/BA.1 (HEK)-Biotin is specifically biotinylated at a single site, preserving full functionality of the protein.

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Miltenyi Biotec B.V. & Co. KG
Friedrich-Ebert-Straße 68, 51429 Bergisch Gladbach, Germany
Phone +49 2204 8306-0, Fax +49 2204 85197
macsde@miltenyi.com
www.miltenyibiotec.com

1.2 Applications

The product can be used for a variety of applications, including:

- Analysis of SARS-CoV-2 immune responses
- Detection and characterization of SARS-CoV-2–specific antibodies
- Studying SARS-CoV-2 cell binding, infection, and viral life cycle

The optimal concentration for a specific application should be determined by a dose-response experiment.

Refer to **www.miltenyibiotec.com** for all data sheets and protocols. Miltenyi Biotec provides technical support worldwide. Visit www.miltenyibiotec.com for local Miltenyi Biotec Technical Support contact information.

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