

XRCC5 Protein, Human, Recombinant (His & Myc)

General Information

Synonyms:	Ku80;86 kDa subunit of Ku antigen;X-ray repair cross-complementing protein 5;Ku86;XRCC5; ATP-dependent DNA helicase 2 subunit 2;CTC box-binding factor 85 kDa subunit (CTC85; CTCBF);G22P2;Lupus Ku autoantigen protein p86;X-ray repair complementing defective repair in Chinese hamster cells 5 (double-strand-break rejoining);Nuclear factor IV;ATP-dependent DNA helicase II 80 kDa subunit;DNA repair protein XRCC5;Thyroid-lupus autoantigen (TLAA)
Protein Construction:	251-455 aa
Species:	Human
Expression Host:	E. coli
Accession:	P13010
Molecular Weight:	30.4 kDa (predicted)
AA Sequence:	LTIGSNLSIRIAAYKSILQERVKKTWTVVDAKTLKKEDIQKETVYCLNDDDETEVLKEDIQGFYRYSDIVPFSKV DEEQMKYKSEGKCFVSLGFKSSQVQRFFMGNQVLKVFVAARDDEAAVALSSLIHALDDLDMVAIVRYAY DKRANPQVGVAFPKIKHNYECLVYVQLPFMEDLRQYMFSSLKNSKKYAPTEAQLNAVD

QC Testing

Biological Activity:	Activity has not been tested. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 85% as determined by SDS-PAGE.
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Tris-based buffer, 50% glycerol

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Single-stranded DNA-dependent ATP-dependent helicase that plays a key role in DNA non-homologous end joining (NHEJ) by recruiting DNA-PK to DNA. Required for double-strand break repair and V(D)J recombination. Also has a role in chromosome translocation. The DNA helicase II complex binds preferentially to fork-like ends of double-stranded DNA in a cell cycle-dependent manner. It works in the 3'-5' direction. During NHEJ, the XRCC5-XRCC6 dimer performs the recognition step: it recognizes and binds to the broken ends of the DNA and protects them from further resection. Binding to DNA may be mediated by XRCC6. The XRCC5-XRCC6 dimer acts as regulatory subunit of the DNA-dependent protein kinase complex DNA-PK by increasing the affinity of the catalytic subunit PRKDC to DNA by 100-fold. The XRCC5-XRCC6 dimer is probably involved in stabilizing broken DNA ends and bringing them together. The assembly of the DNA-PK complex to DNA ends is required for the NHEJ ligation step. The XRCC5-XRCC6 dimer probably also acts as a 5'-deoxyribose-5-phosphate lyase (5'-dRP lyase), by catalyzing the beta-elimination of the 5' deoxyribose-5-phosphate at an abasic site near double-strand breaks. XRCC5 probably acts as the catalytic subunit of 5'-dRP activity, and allows to 'clean' the termini of abasic sites, a class of nucleotide damage commonly associated with strand breaks, before such broken ends can be joined. The XRCC5-XRCC6 dimer together with APEX1 acts as a negative regulator of transcription. In association with NAA15, the XRCC5-XRCC6 dimer binds to the osteocalcin promoter and activates osteocalcin expression. As part of the DNA-PK complex, involved in the early steps of ribosome assembly by promoting the processing of precursor rRNA into mature 18S rRNA in the small-subunit processome. Binding to U3 small nucleolar RNA, recruits PRKDC and XRCC5/Ku86 to the small-subunit processome. Plays a role in the regulation of DNA virus-mediated innate immune response by assembling into the HDP-RNP complex, a complex that serves as a platform for IRF3 phosphorylation and subsequent innate immune response activation through the cGAS-STING pathway.

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