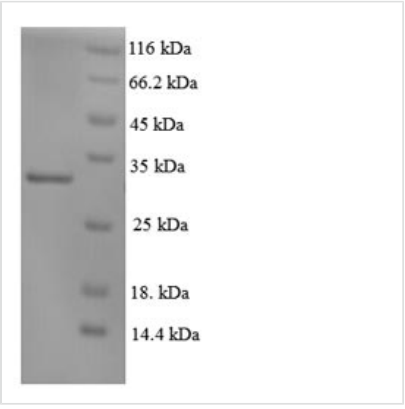
Recombinant Human DNA repair protein complementing XP-C cells (XPC), partial

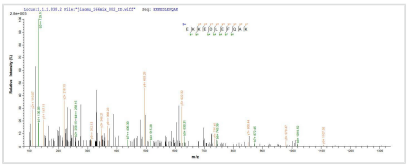
Product Code	CSB-EP026217HU
Relevance	Involved in global genome nucleotide excision repair (GG-NER) by acting as damage sensing and DNA-binding factor component of the XPC complex. Has only a low DNA repair activity by itself which is stimulated by RAD23B and RAD23A. Has a preference to bind DNA containing a short single-stranded segment but not to damaged oligonucleotides. This feature is proposed to be related to a dynamic sensor function: XPC can rapidly screen duplex DNA for non-hydrogen-bonded bases by forming a transient nucleoprotein intermediate complex which matures into a stable recognition complex through an intrinsic single-stranded DNA-binding activity.The XPC complex is proposed to represent the first factor bound at the sites of DNA damage and together with other core recognition factors, XPA, RPA and the TFIIH complex, is part of the pre-incision (or initial recognition) complex. The XPC complex recognizes a wide spectrum of damaged DNA characterized by distortions of the DNA helix such as single-stranded loops, mismatched bubbles or single-stranded overhangs. The orientation of XPC complex binding appears to be crucial for inducing a productive NER. XPC complex is proposed to recognize and to interact with unpaired bases on the undamaged DNA strand which is followed by recruitment of the TFIIH complex and subsequent scanning for lesions in the opposite strand in a 5'-to-3' direction by the NER machinery. Cyclobutane pyrimidine dimers (CPDs) which are formed upon UV-induced DNA damage esacpe detection by the XPC complex due to a low degree of structural perurbation. Instead they are detected by the UV-DDB complex which in turn recruits and cooperates with the XPC complex in the respective DNA repair. In vitro, the XPC:RAD23B dimer is sufficient to initiate NER; it preferentially binds to cisplatin and UV-damaged double-stranded DNA and also binds to a variety of chically and structurally diverse DNA adducts. XPC:RAD23B contacts DNA both 5' and 3' of a cisplatin lesion with a preference for the 5' side. XPC:RAD23B induces a bend in DNA upon binding. XPC:RAD23B stimulates the activity of DNA glycosylases TDG and SMUG1.
Abbreviation	Recombinant Human XPC protein, partial
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	Q01831
Alias	Xeroderma pigmentosum group C-complementing proteinp125
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.

Sequence	SLPAASSSSSSSKRGKKMCSDGEKAEKRSIAGIDQWLEVFCEQEEKWVCVDC VHGVVGQPLTCYKYATKPMTYVVGIDSDGWVRDVTQRYDPVWMTVTRKCRV DAEWWAETLRPYQSPFMDREKKEDLEFQAKHMDQPLPTAIGLYKNHPLYALK RHLLKYEAIYPETAAILGYCRGEAVYSRDCVHTLHSRDTWLKKARVVRLGEVP YKMVKGFSNRARKARLAEPQLREENDLGLFG
Research Area	Epigenetics and Nuclear Signaling
Source	E.coli
Target Names	XPC
Expression Region	496-734aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	31.5kDa
Protein Length	Partial

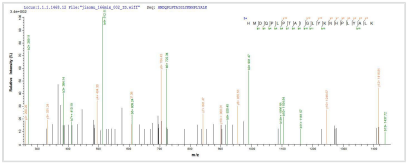
Image



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.



Based on the SEQUEST from database of E.coli host and target protein, the LC-MS/MS Analysis result of CSB-EP026217HU could indicate that this peptide derived from E.coli-expressed Homo sapiens (Human) XPC.



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Description

The recombinant Human XPC was expressed with the amino acid range of 496-734. The calculated molecular weight for this XPC protein is 31.5 kDa. This XPC protein is produced using e.coli expression system. The N-terminal 6xHis tag was smoothly integrated into the coding gene of XPC, which enables a simple process of detecting and purifying the XPC recombinant protein in the following steps.

	The human DNA repair protein complementing XP-C cells (XPC) is a key component of the nucleotide excision repair (NER) pathway, which is responsible for identifying and repairing DNA damage caused by ultraviolet (UV) light, environmental carcinogens, and other sources. XPC specifically recognizes and binds to DNA lesions, such as bulky adducts and thymidine dimers, marking them for subsequent repair. This initial recognition step is crucial for the recruitment of other NER factors and the removal of damaged DNA segments. Dysfunction or mutations in the XPC gene can lead to xeroderma pigmentosum (XP), a rare genetic disorder characterized by extreme sensitivity to UV radiation and a high risk of skin cancer. The study of XPC is essential for understanding the molecular mechanisms underlying DNA repair processes and how defects in these mechanisms contribute to human diseases, particularly in the context of cancer susceptibility and genomic stability.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.