

gyrA Protein, E. coli, Recombinant (His)

General Information

Synonyms: hisW;gyrA;parD;DNA gyrase subunit A;nalA

Protein Construction: 2-875 aa

Species: E. coli

Expression Host: E. coli

Accession: P0AES4

Molecular Weight: 101.0 kDa (predicted)

AA Sequence:

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SDLAREITPVNIEELKSSYLDYAMSVIVGRALPDVRDGLKPVHRRVLYAMNVLGNDWNKAYKKSARVVG DVI
GKYHPHGDWAVYDTIVRMAQPFSLRYMLVDGQGNFGSIDGDSAAAMRYTEIRLAKIAHELMADLEKETVDF
VDNYDGTTEKIPDVMPTKIPNLLVNGSSGIAVGMATNIPPHNLTEVINGCLAYIDDEDISIEGLMEHIPGPDFPTA
AIINGRRGIEEAYRTGRGKVIYRARAEEVEVDAKTGRETIIVHEIPYQVVKARLIEKIAELVKEKRVEGISALRDESD
KDGMRIVIEVKRDAVGEVVLNLYSQTQLQVSFGINMVALHHGQPKIMNLKDIIAAFVRRHREVVTRRTIFELR
KARDRAHILEALAVLANIDPIELIRHAPTPAEAKTALVANPWQLGNVAAMLERAGDDAARPEWLEPEFGVR
DGLYYLTEQQAQAILDLRLQKLTGLEHEKLLDEYKELLDQIAELLRILGSADRLMEVIREELELVREQFGDKRRTTE
ITANSADINLEDLITQEDVVVTLSHQGYVYKQPLSEYEAQRRGGKGSAAARIKEEDFIDRLLVANTHDHILCFSS
RGRVYSMKVYQLPEATRGARGRPVIVNLLPLEQDERITAILPVTEFEEGVKVFMATANGTVKKTVLTEFNRLRTA
GKVAIKLVDGDELIGVDLTSGEDEVMLFSAEGKVVRFKESVVRAMGCNTTGVRGIRLGEGDKVVS LIVPRGDG
AILTATQNGYGKRTAVAEYPTKSRATKGVISIKVTERNGLVVGAVQVDDCDQIMMITDAGTLVTRVSEISIVGR
NTQGVILIRTAEDENVVGLQRVAEPVDEEDLDTIDGSAAEGDDEIAPEVDVDDEPEEE
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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

A type II topoisomerase that negatively supercoils closed circular double-stranded (ds) DNA in an ATP-dependent manner to maintain chromosomes in an underwound state. This makes better substrates for topoisomerase IV (ParC and ParE) which is the main enzyme that unlinks newly replicated chromosomes in E.coli. Gyrase catalyzes the interconversion of other topological isomers of dsDNA rings, including catenanes. Relaxes negatively supercoiled DNA in an ATP-independent manner. E.coli gyrase has higher supercoiling activity than many other bacterial gyrases; at comparable concentrations E.coli gyrase introduces more supercoils faster than M. tuberculosis gyrase, while M.tuberculosis gyrase has higher decatenation than supercoiling activity compared to E.coli. E.coli makes 15% more negative supercoils in pBR322 plasmid DNA than S.typhimurium; the S.typhimurium GyrB subunit is toxic in E.coli, while the E.coli copy can be expressed in S.typhimurium even though the 2 subunits have 777/804 residues identical. The enzymatic differences between E.coli gyrase and topoisomerase IV are largely due to the GyrA C-terminal domain (approximately residues 524-841) and specifically the GyrA-box.; Negative supercoiling favors strand separation, and DNA replication, transcription, recombination and repair, all of which involve strand separation. Type II topoisomerases break and join 2 DNA strands simultaneously in an ATP-dependent manner.

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