Data Sheet (Cat.No.TMPH-00616)

DNA-binding protein H-NS Protein, E. coli, Recombinant (His)

General Information

Synonyms:	Heat-stable nucleoid-structuring protein;DNA-binding protein H-NS;hns;hnsA;topS;Protein H1;osmZ;Protein B1;h-ns;msyA;pilG;cur;drdX;Histone-like protein HLP-II;bglY
Protein Construction:	2-137 aa
Species:	E. coli
Expression Host:	E. coli
Accession:	P0ACF8
Molecular Weight:	19.5 kDa (predicted)
AA Sequence:	SEALKILNNIRTLRAQARECTLETLEEMLEKLEVVVNERREEESAAAAEVEERTRKLQQYREMLIADGIDPNELL NSLAAVKSGTKAKRAQRPAKYSYVDENGETKTWTGQGRTPAVIKKAMDEQGKSLDDFLIKQ

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 DNA-binding protein implicated in transcriptional repression (silencing). Also involved in bacterial chromosome organization and compaction. H-NS binds tightly to AT-rich dsDNA and inhibits transcription. Binds upstream and downstream of initiating RNA polymerase, trapping it in a loop and preventing transcription. Binds to hundreds of sites, approximately half its binding sites are in non-coding DNA, which only accounts for about 10% of the genome. Many of these loci were horizontally transferred (HTG); this offers the selective advantage of silencing

foreign DNA while keeping it in the genome in case of need. Suppresses transcription at many intragenic sites as well as transcription of spurious, non-coding RNAs genome-wide. Repression of HTG by H-NS is thought to allow their DNA to evolve faster than non-H-NS-bound regions, and facilitates integration of HTG into transcriptional regulatory networks. A subset of H-NS/StpA-regulated genes also require Hha (and/or Cnu, ydgT) for repression; Hha and Cnu increase the number of genes DNA bound by H-NS/StpA and may also modulate the oligomerization of the H-NS/StpA-complex. The protein forms 2 clusters in the nucleoid which gather hns-bound loci together, bridging non-contiguous DNA, and causes DNA substantial condensation. Binds DNA better at low temperatures than at 37 degrees Celsius; AT-rich sites nucleate H-NS binding, further DNA-binding is cooperative and this cooperativity decreases with rising temperature. Transcriptional repression can be inhibited by dominant-negative mutants of StpA or itself. May effect transcriptional elongation. Can increase translational efficiency of mRNA with suboptimal Shine-Dalgarno sequences. Plays a role in the thermal control of pili and adhesive curli fimbriae production, by inducing transcription of csgD. Plays a role in flagellar function. Represses the CRISPR-cas promoters, permits only weak transcription of the crRNA precursor; its repression is antagonized by LeuO. Binds preferentially to the upstream region of its own gene recognizing two segments of DNA on both sides of a bend centered around -150. Overexpression suppresses secY24, a temperature-sensitive mutation. Has also been reported to activate transcription of some genes.