

## DnaJ Active Recombinant Protein

### Product Specifications

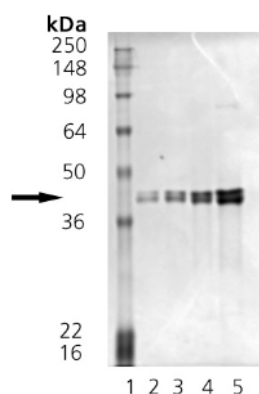
<b>Catalog Number:</b>	SPP-640
<b>Product Description:</b>	DnaJ Active Recombinant Protein ( <i>E. coli</i> )
<b>Format:</b>	HEPES, KCl, glycerol, DTT <i>DnaJ has a tendency to aggregate in solution with ionic strength lower than 0.1 M KCl. Where lower salt conditions are required, addition of 0.05% Triton X100 or Brij 58 is recommended.</i>
<b>Application:</b>	WB Control: 50 ng of protein recommended (Colorimetric)  ATPase Activity Assay: Positive <i>Tested positive for its ability to stimulate DnaK's ATPase activity in the presence of GrpE</i>  <i>The optimal dilution for a specific application must be determined by the investigator</i>
<b>Purity:</b>	> 90 % pure as determined by SDS-PAGE and Western blot analyses
<b>Molecular Weight:</b>	~ 43 kDa observed
<b>Concentration:</b>	See product label
<b>Storage:</b>	Store at -70°C <i>Shipping conditions may differ from the recommended storage temperature</i>
<b>Related Products:</b>	
SPA-410	DnaJ polyclonal Antibody
SPA-880	DnaK Monoclonal Antibody (8E2/2)
SPP-630	DnaK Active Recombinant Protein
SPA-240	GrpE Polyclonal Antibody
SPP-650	GrpE Recombinant Protein

### Background:

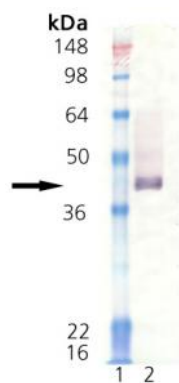
*Escherichia coli* heat shock protein DnaJ belongs to the molecular chaperone class of proteins. Located in an operon with *dnaK*<sup>1</sup>, the *E. coli dnaJ* gene shares sequence identity with eukaryotic cytosolic and endoplasmic reticulum DnaJ homologs (Hsp40) involved in protein folding, membrane translocation of newly synthesized proteins, and initiation of translation. The N-terminal, highly-conserved "J" domain of the DnaJ protein supports interaction with the DnaK protein and represents the signature sequence of DnaJ family members. Bacterial DnaJ protein acts synergistically with bacterial chaperones DnaK (Hsp70 homolog) and GrpE in various functions<sup>2</sup>, including suppressing eukaryotic and prokaryotic polypeptide aggregation to promote protein folding, facilitating protein translocation through intracellular compartments or protein secretion, and repairing and reactivating partially aggregated enzymes such as *E. coli* RNAP and luciferase. In these reactions, DnaJ protein facilitates the binding of DnaK to its substrate by accelerating DnaK-catalyzed ATP hydrolysis to produce a DnaK-ADP form with a higher affinity for certain protein substrates. Some eukaryotic homologues of DnaJ also display an ability to stimulate the ATPase activity of Hsp70 proteins, including DnaJ homologue *S. cerevisiae* YDJ1 which interacts with DnaK homologue Ssa1 to stimulate its ATPase activity. Data suggests that DnaJ protein acting alone possesses chaperone activity, demonstrating an ability to bind tightly to denatured proteins such as rhodanese or luciferase to prevent their aggregation or misfolding.

### References:

1. Zylicz, M., et al. (1985) J Biol Chem. **260**, 7591-7598.
2. Sock, E., et al. (1999) Molec Cell Biol. **19**, 2455-2464.



**SDS-PAGE Analysis:** Lane 1: MWM, Lane 2: 0.5 µg; Lane 3: 1 µg; Lane 4: 2 µg; Lane 5: 5 µg DnaJ



**Western Blot Analysis:** Lane 1: MWM, Lane 2: 50 ng DnaJ; probed with a 1:5000 dilution of SPA-410

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