

## Product datasheet for **RN213866**

### Hspa1b (NM\_212504) Rat Untagged Clone

#### Product data:

Product Type:	Expression Plasmids
Product Name:	Hspa1b (NM_212504) Rat Untagged Clone
Tag:	Tag Free
Symbol:	Hspa1b
Synonyms:	Hsp70-1; Hsp70-2; HSP70.2; Hsp72; Hspa1; Hspa1a; Hspa2
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-Entry (PS100001)
E. coli Selection:	Kanamycin (25 ug/mL)



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**Fully Sequenced ORF:** >RN213866 representing NM\_212504  
 Red=Cloning site Blue=ORF Orange=Stop codon

TTTTGTAATACGACTCACTATAGGGCGGCCGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC  
 GCC**CGGATCGCC**

ATGGCCAAGAAAACAGCGATCGGCATCGACCTGGCACCACCTACTCGTGCCTGGCGTGTTCAGCAGC  
 GCAAGGTGGAGATCATCGCCAACGACCAGGGCAACCGCACGACCCAGCTACGTGGCCTTCACCGACAC  
 CGAGCGGCTCATCGGGACGCCGCAAGAACCAGGTGGCGCTGAACCCGAGAACCCTGTTCAGCAGC  
 AAGCGGCTGATCGGCCGCAAGTTCGCGCACCCGGTGGTGCAGTCGGACATGAAGCACTGGCCCTCCAGG  
 TGGTGAACGACGGCGACAAGCCCAAGGTGCAGGTGAACAAGGGCGAGAACCAGTCTACCCGGA  
 GGAGATCTCGTCCATGGTGTGACCAAGATGAAGGAGATCGCCGAGGCGTACCTGGGCCACCCGGTACC  
 AACCGGCTGATCACCGTCCCGCTACTTCAACGACTCGCAGCGGACGGCCCAAGGACGCGGGCGTGA  
 TCGCGGGTCTGAACGTGTGCGGATCATCAACGAGCCACGGCGCCGCCATCGCCTACGGGCTGGACCG  
 GACCGGAAGGGCGAGCGCAACGTGCTCATCTTCGACCTGGGGGGCGGCAGTTCGACGTGTCCATCCTG  
 ACGATCGACGACGGCATCTTCGAGGTGAAGGCCACGGCGGGCGACACGCACCTGGGCGGGGAGGACTTCG  
 ACAACCGGCTGGTGGCCACTTCGTGGAGGAGTCAAGAGGAAGCACAAGAAGGACATCAGCCAGAACAA  
 GCGCGCGGTGCGGCGACTGCGCACGGCGTGCAGAGGGCCAAGAGGACGCTGTCTCCAGCACCCAGGCC  
 AGCCTGGAGATCGACTCTCTGTTTCGAGGGCATCGACTTCTACACGTCCATCACGCGGGCGCGGTTTCGAGG  
 AGCTGTGCTCGGACCTGTTCCGCGGCACGCTGGAGCCCGTGGAGAAGGCCTGCGCGACGCCAAGCTGGA  
 CAAGGCGCAGATCCACGACCTGGTGTGGTGGGCGGCTCGACGCGCATCCCAAGGTGCAGAAGCTGCTG  
 CAGGACTTCTTCAACGGGCGGACCTGAACAAGAGCATCAATCCGGACGAGGCGGTGGCTACGGGGCGG  
 CGGTGACGGCGGCCATCCTGATGGGGGACAAGTCGGAGAACGTGCAGGACCTGCTGCTGCTGACGTGGC  
 GCCGCTGTCGCTGGGTCTGGAGACCGCGGGCGGGTGTGATGACGGCGCTCATCAAGCGCAACTCCACCATC  
 CCCACCAAGCAGACGCAGACCTTACCACCTACTCGGACAACCAGCCCGGGTGTGATCCAGGTGTACG  
 AGGGCGAGAGGGCCATGACGCGGACAACAACCTGCTGGGGCGCTTCGAGTTGAGCGGCATCCCGCCGGC  
 TCCCAGGGGCGTCCCCAGATCGAGGTGACCTTCGACATCGACGCCAACGGCATCCTGAACGTCACGGCC  
 ACTGACAAGAGCACCGGCAAGGCCAACAAGATCACCATCACCAACGACAAGGGCCGCTGAGCAAGGAGG  
 AGATCGAGCGCATGGTGCAGGAGCCGAGCGCTACAAGGCGGAGGACGAGGTGCAGCGGAGAGGGTGGC  
 TGCCAAGAATGCGCTCGAGTCTATGCCTTCAACATGAAGAGCGCCGTGGAGGACGAGGGTCTCAAGGGC  
 AAGATCAGCGAGGCTGACAAGAAGAAGGTGCTGGACAAGTGCCAGGAGGTGATCTCTGGCTGGACTCTA  
 ACACGCTGGCTGAGAAAGAGGAGTTCGTGCACAAGCGGGAGGAGCTGGAGCGGGTGTGCAACCCGATCAT  
 CAGCGGGCTGATCAGGGTGCGGGTGCTCCCGGGGCTGGGGGCTTCGGGGCCAGGCGCCCAAGGGAGGC  
 TCTGGGTGCGGGCCACCATCGAGGAGGTGGAT**TAG**

**ACGCGT**ACGCGGCCGCTCGAGCAGAACTCATCTCAGAAGAGGATCTGGCAGCAATGATATCCTGGATT  
 ACAAGGATGACGACGATAAGGTTTAA

- Restriction Sites:** SgfI-MluI
- ACCN:** NM\_212504
- Insert Size:** 1926 bp
- OTI Disclaimer:** Our molecular clone sequence data has been matched to the reference identifier above as a point of reference. Note that the complete sequence of our molecular clones may differ from the sequence published for this corresponding reference, e.g., by representing an alternative RNA splicing form or single nucleotide polymorphism (SNP).
- Components:** The ORF clone is ion-exchange column purified and shipped in a 2D barcoded Matrix tube containing 10ug of transfection-ready, dried plasmid DNA (reconstitute with 100 ul of water).

**Reconstitution Method:**

1. Centrifuge at 5,000xg for 5min.
2. Carefully open the tube and add 100ul of sterile water to dissolve the DNA.
3. Close the tube and incubate for 10 minutes at room temperature.
4. Briefly vortex the tube and then do a quick spin (less than 5000xg) to concentrate the liquid at the bottom.
5. Store the suspended plasmid at -20°C. The DNA is stable for at least one year from date of shipping when stored at -20°C.

**RefSeq:** [NM\\_212504.1](#), [NP\\_997669.1](#)

**RefSeq Size:** 5918 bp

**RefSeq ORF:** 1926 bp

**Locus ID:** 294254

**UniProt ID:** [P0DMW0](#)

**Cytogenetics:** 20p12

**Gene Summary:**

Molecular chaperone implicated in a wide variety of cellular processes, including protection of the proteome from stress, folding and transport of newly synthesized polypeptides, activation of proteolysis of misfolded proteins and the formation and dissociation of protein complexes. Plays a pivotal role in the protein quality control system, ensuring the correct folding of proteins, the re-folding of misfolded proteins and controlling the targeting of proteins for subsequent degradation. This is achieved through cycles of ATP binding, ATP hydrolysis and ADP release, mediated by co-chaperones. The co-chaperones have been shown to not only regulate different steps of the ATPase cycle, but they also have an individual specificity such that one co-chaperone may promote folding of a substrate while another may promote degradation. The affinity for polypeptides is regulated by its nucleotide bound state. In the ATP-bound form, it has a low affinity for substrate proteins. However, upon hydrolysis of the ATP to ADP, it undergoes a conformational change that increases its affinity for substrate proteins. It goes through repeated cycles of ATP hydrolysis and nucleotide exchange, which permits cycles of substrate binding and release. The co-chaperones are of three types: J-domain co-chaperones such as HSP40s (stimulate ATPase hydrolysis by HSP70), the nucleotide exchange factors (NEF) such as BAG1/2/3 (facilitate conversion of HSP70 from the ADP-bound to the ATP-bound state thereby promoting substrate release), and the TPR domain chaperones such as HOPX and STUB1. Maintains protein homeostasis during cellular stress through two opposing mechanisms: protein refolding and degradation. Its acetylation/deacetylation state determines whether it functions in protein refolding or protein degradation by controlling the competitive binding of co-chaperones HOPX and STUB1. During the early stress response, the acetylated form binds to HOPX which assists in chaperone-mediated protein refolding, thereafter, it is deacetylated and binds to ubiquitin ligase STUB1 that promotes ubiquitin-mediated protein degradation. Regulates centrosome integrity during mitosis, and is required for the maintenance of a functional mitotic centrosome that supports the assembly of a bipolar mitotic spindle. Enhances STUB1-mediated SMAD3 ubiquitination and degradation and facilitates STUB1-mediated inhibition of TGF-beta signaling. Essential for STUB1-mediated ubiquitination and degradation of FOXP3 in regulatory T-cells (Treg) during inflammation. Negatively regulates heat shock-induced HSF1 transcriptional activity during the attenuation and recovery phase period of the heat shock response.[UniProtKB/Swiss-Prot Function]