

Supplementary figures

Supplementary figure 1. Homologs of the HSPA5 proteins. A. Conservation for HSPA5 in 20 different species. B. The indicated the conserved domains.

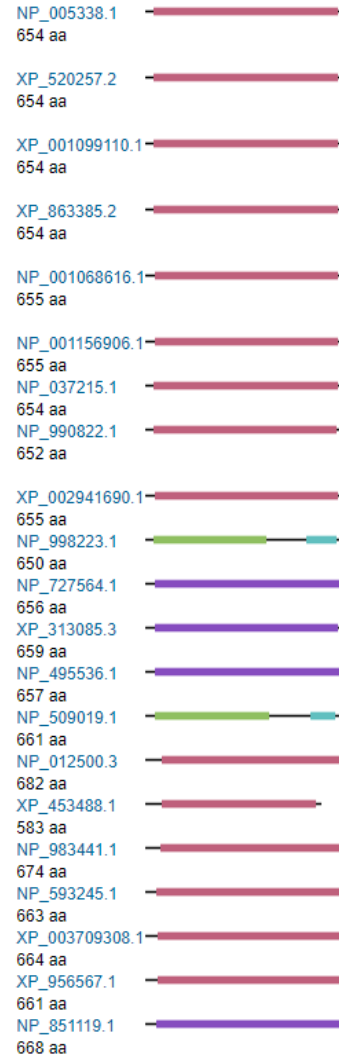
A

Genes

HSPA5, *H.sapiens*
heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa)
HSPA5, *P.troglodytes*
heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa)
HSPA5, *M.mulatta*
heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa)
HSPA5, *C.lupus*
heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa)
HSPA5, *B.taurus*
heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa)
Hspa5, *M.musculus*
heat shock protein 5
Hspa5, *R.norvegicus*
heat shock protein 5
HSPA5, *G.gallus*
heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa)
LOC100492570, *X.tropicalis*
78 kDa glucose-regulated protein-like
hspa5, *D.rerio*
heat shock protein 5
Hsc70-3, *D.melanogaster*
Heat shock protein cognate 3
AgaP_AGAP004192, *A.gambiae*
AgaP_AGAP004192
hsp-4, *C.elegans*
hsp-4
hsp-3, *C.elegans*
hsp-3
KAR2, *S.cerevisiae*
KAR2
KLLA0D09559g, *K.lactis*
KLLA0D09559g
AGOS_ACR038W, *E.gossypii*
AGOS_ACR038W
bip1, *S.pombe*
bip1
MGG_02503, *M.oryzae*
MGG_02503
NCU03982, *N.crassa*
NCU03982
BIP2, *A.thaliana*
BIP2

Proteins

NP_005338.1
654 aa
XP_520257.2
654 aa
XP_001099110.1
654 aa
XP_863385.2
654 aa
NP_001068616.1
655 aa
NP_001156906.1
655 aa
NP_037215.1
654 aa
NP_990822.1
652 aa
XP_002941690.1
655 aa
NP_998223.1
650 aa
NP_727564.1
656 aa
XP_313085.3
659 aa
NP_495536.1
657 aa
NP_509019.1
661 aa
NP_012500.3
682 aa
XP_453488.1
583 aa
NP_983441.1
674 aa
NP_593245.1
663 aa
XP_003709308.1
664 aa
XP_956567.1
661 aa
NP_851119.1
668 aa



B

Conserved Domains

Conserved Domains from CDD found in prote sequences by rpsblast searching.

HSP70 (pfam00012)

■ Hsp70 protein.

PTZ00009 (PTZ00009)

■ heat shock 70 kDa protein; Provisional.

HSP70 (pfam00012)

■ Hsp70 protein.

NBD_sugar-kinase_HSP70_actin (cl17037)

■ Nucleotide-Binding Domain of the sugar kinase/HSP70/actin superfamily.

ApoLp-III_like (cl19113)

■ Apolipoprotein-III and similar insect proteins.

Related Homology Resources

Links to curated and computed homology information found in other databases.

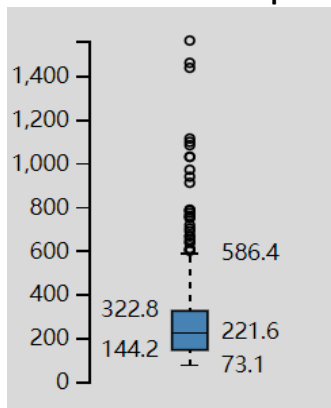
MGI:95835

Orthology group for M.musculus Hspa5 includes H.sapiens HSPA5 and R.norvegicus Hspa5.

Supplementary figure 2. The *HSPA5* mRNA expression and comparison to *ACE2*. The *HSPA5* mRNA expression information from databases of LUNG - GTEx RNA-seq (A), and LUNG - FANTOM5 CAGE (B) in human lungs. pTPM values give a quantification of the gene abundance which is comparable between different genes and samples. C. *HSPA5* and *ACE2* mRNA levels (NX) in lungs. Consensus dataset of mRNA levels for *HSPA5* and *ACE2* are derived from HPA dataset, GTEx dataset, and FANTOM5 dataset. The RNA-sequencing results generated in the HPA are reported as normalized NX values. In the HPA, a NX value of 1.0 is defined as a threshold for expression of the corresponding protein. pTPM, transcripts per million. NX, normalized expression.

A

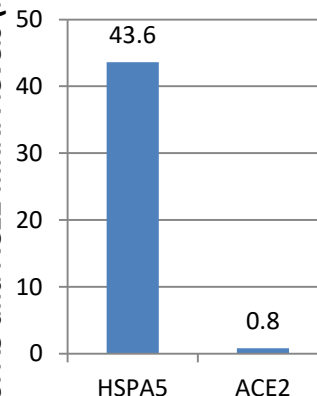
LUNG - GTEx RNA-seq



Lung	
Average pTPM:	275.1
Samples:	427
Max pTPM:	1560.6
Min pTPM:	73.1
Std pTPM:	205.9
Median pTPM:	221.6

C

HSPA5 and ACE2 mRNA levels (NX)



B

LUNG - FANTOM5 CAGEⁱ

Max Scaled Tags Per Million 449.0

	FANTOM5 sample id	Sample description	Scaled Tags Per Million
Lung	FF:10019-101D1	46,65,94 years, mixed	578.7
Scaled Tags Per Million: 578.7			
Lung - right lower lobe	FF:10075-102A3	29 years, male	319.3
Scaled Tags Per Million: 319.3			

Supplementary figure 3. Localization of HSPA5 protein in malignant tumors and cancer cell lines. A~E. The representative IHC images of tumors from cancers of colorectal, breast, prostate, lung, and liver, respectively. The images by antibody staining in 20 different tumors is summarized but not showed all. The protein expressions for HSPA5 from malignant tumors were obtained in the database of the Human Protein Atlas (HPA) (<https://www.proteinatlas.org/ENSG00000044574-HSPA5/pathology>) F~I. The representative IF staining of epidermoid carcinoma cell line A-431, derived from an 85-year-old female, with HSPA5 antibody (cat #: HPA038845, Sigma-Aldrich) for HSPA5 staining (F), nucleus staining (G), microtubules staining (H), and all merged together (I). The images of human cells give overviews about the subcellular location of HSPA5 protein from immunofluorescence microscopy (<https://www.proteinatlas.org/ENSG00000044574-HSPA5/cell#human>). The representative immunofluorescent images are displayed. Three different organelle probes with different channels are displayed in the multiple color images - nucleus stained in blue, microtubules in red, and an antibody staining targeting the protein of HSPA5 in green.

