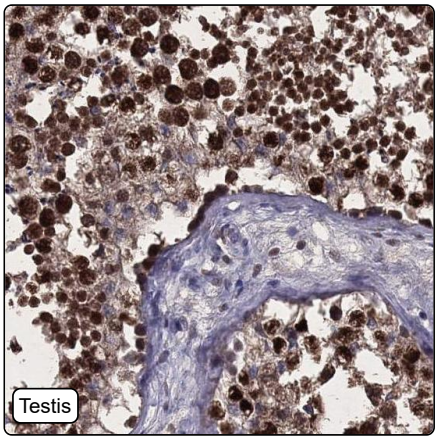
CPTC-TP53-2 (CAB079965)

Uniprot ID: P04637
Protein name: P53_HUMAN
Full name: Cellular tumor antigen p53
Tissue specificity: Ubiquitous. Isoforms are expressed in a wide range of normal tissues but in a tissue-dependent manner. Isoform 2 is expressed in most normal tissues but is not detected in brain, lung, prostate, muscle, fetal brain, spinal cord and fetal liver. Isoform 3 is expressed in most normal tissues but is not detected in lung, spleen, testis, fetal brain, spinal cord and fetal liver. Isoform 7 is expressed in most normal tissues but is not detected in prostate, uterus, skeletal muscle and breast. Isoform 8 is detected only in colon, bone marrow, testis, fetal brain and intestine. Isoform 9 is expressed in most normal tissues but is not detected in brain, heart, lung, fetal liver, salivary gland, breast or intestine.
Function: Acts as a tumor suppressor in many tumor types; induces growth arrest or apoptosis depending on the physiological circumstances and cell type. Involved in cell cycle regulation as a trans-activator that acts to negatively regulate cell division by controlling a set of genes required for this process. One of the activated genes is an inhibitor of cyclin-dependent kinases. Apoptosis induction seems to be mediated either by stimulation of BAX and FAS antigen expression, or by repression of Bcl-2 expression. Its pro-apoptotic activity is activated via its interaction with PPP1R13B/ASPP1 or TP53BP2/ASPP2 (PubMed:12524540). However, this activity is inhibited when the interaction with PPP1R13B/ASPP1 or TP53BP2/ASPP2 is displaced by PPP1R13L/iASPP (PubMed:12524540). In cooperation with mitochondrial PPIF is involved in activating oxidative stress-induced necrosis; the function is largely independent of transcription. Induces the transcription of long intergenic non-coding RNA p21 (lincRNA-p21) and lincRNA-Mkln1. LincRNA-p21 participates in TP53-dependent transcriptional repression leading to apoptosis and seems to have an effect on cell-cycle regulation. Implicated in Notch signaling cross-over. Prevents CDK7 kinase activity when associated to CAK complex in response to DNA damage, thus stopping cell cycle progression. Isoform 2 enhances the transactivation activity of isoform 1 from some but not all TP53-inducible promoters. Isoform 4 suppresses transactivation activity and impairs growth suppression mediated by isoform 1. Isoform 7 inhibits isoform 1-mediated apoptosis. Regulates the circadian clock by repressing CLOCK-ARNTL/BMAL1-mediated transcriptional activation of PER2 (PubMed:24051492).
Subcellular location:
Unnamed:
Cytoplasm (*experimental evidence*)
Nucleus (*experimental evidence*)
Nucleus > PML body (*experimental evidence*)
Endoplasmic reticulum (*experimental evidence*)
Mitochondrion matrix (*experimental evidence*)
Cytoplasm > Cytoskeleton > Microtubule organizing center > Centrosome (*experimental evidence*)
NOTE: Interaction with BANP promotes nuclear localization (PubMed:15701641). Recruited into PML bodies together with CHEK2 (PubMed:12810724). Translocates to mitochondria upon oxidative stress (PubMed:22726440). Translocates to mitochondria in response to mitomycin C treatment (PubMed:27323408).
Isoform 1:
Nucleus
Cytoplasm
NOTE: Predominantly nuclear but localizes to the cytoplasm when expressed with isoform 4.
Isoform 2:
Nucleus
Cytoplasm
NOTE: Localized mainly in the nucleus with minor staining in the cytoplasm.
Isoform 3:
Nucleus
Cytoplasm
NOTE: Localized in the nucleus in most cells but found in the cytoplasm in some cells.
Isoform 4:
Nucleus
Cytoplasm
NOTE: Predominantly nuclear but translocates to the cytoplasm following cell stress.
Isoform 7:
Nucleus
Cytoplasm
NOTE: Localized mainly in the nucleus with minor staining in the cytoplasm.
Isoform 8:
Nucleus
Cytoplasm
NOTE: Localized in both nucleus and cytoplasm in most cells. In some cells, forms foci in the nucleus that are different from nucleoli.
Isoform 9:
Cytoplasm
Protein existence: Experimental evidence at protein level

Comment: ICC-IF: We will try to get a good staining of this antibody in two more cell lines, before publication on the HPA. /Ulrika Axelsson

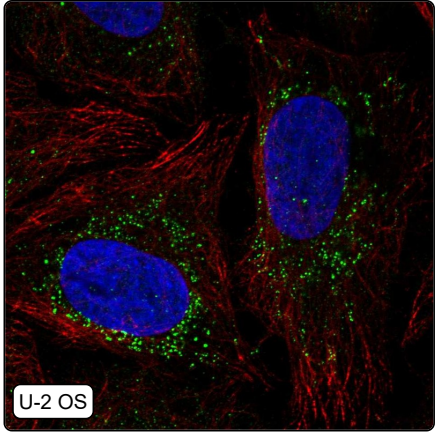
Immunohistochemistry



IHC protocol:	HIER pH6, Dilution 1:2500
IHC test staining:	Strong nuclear and cytoplasmic positivity in testis. Additional cytoplasmic positivity was observed in stomach.
Literature conformance:	Not consistent with gene/protein characterization data
Literature significance:	
RNA consistency:	Not consistent with RNA expression data
IHC Sibling similarity:	Other antibody shows dissimilar IHC staining pattern
IHC fail comment:	ANTIBODY FAILED: Improbable histological location,Not consistent with RNA

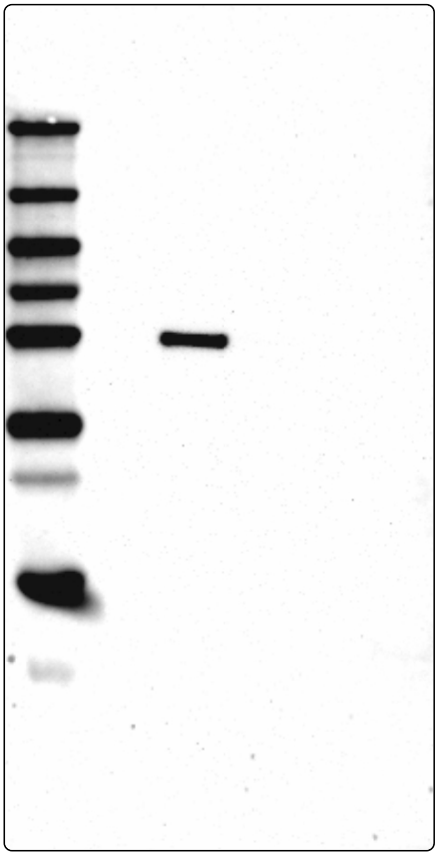
Immunofluorescence

IF Overlay:	antibody (green), anti-tubuline (red) and DAPI (blue)
IF main location:	Mitochondria - 3: **Supportive** (auto)



IF additional location:	Cytosol - 3: **Supportive** (auto) Nucleoplasm - 3: **Supportive** (auto)
IF Antibody score:	Supportive
IF in A549:	Negative
IF in HEK 293:	Negative
IF in U-2 OS:	Nucleoplasm Mitochondria Cytosol

Western blot



WB Size markers (kDa):	250, 130, 100, 70, 55, 35, 25, 15, 10
WB Lanes:	Marker (1), RT4 (2), U-251 MG (3), Plasma (4), Liver (5), Tonsil (6)
WB Target weight (kDa):	3, 14, 15, 18, 18, 21, 21, 23, 24, 24, 27, 30, 32, 33, 34, 38, 38, 38, 39, 39, 39, 39, 43, 44, 44
WB Validation:	Uncertain (Single band differing more than +/-20% from predicted size in kDa and not supported by experimental and/or bioinformatic data.)