abcam

# ab133592

# Anti-Glutathione Synthetase antibody [EPR6563]

Recombinant | RabMAb | KO Validated | 20ul selling size

## Key facts

| | |
|---|---|
| **Isotype** | IgG |
| **Host species** | Rabbit |
| **Storage buffer** | pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 50% Tissue culture supernatant, 40% Glycerol (glycerin, glycerine), 0.05% BSA |
| **Form** | Liquid |
| **Clonality** | Monoclonal |
| **Immunogen** | The exact immunogen used to generate this antibody is proprietary information. |
| **Clone number** | EPR6563 |
| **Purification technique** | Affinity purification Protein A |
| **Dissociation constant** | 2.74 x $10^{-11}$ M |
| **Concentration** | 0.11 mg/mL The concentration of this product may be batch-dependent<br>Batch concentration finder → |

## Reactivity data

## IHC-P

### Tested

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1/50 - 1/100 |
| **Notes** | - |

### Predicted

| | |
|---|---|
| **Species** | Mouse, Rat |
| **Dilution info** | - |
| **Notes** | - |

## IP

### Not recommended

| | |
|---|---|
| **Species** | Human, Mouse, Rat |
| **Dilution info** | - |
| **Notes** | - |

## WB

### Tested

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1/1000 - 1/10000 |
| **Notes** | - |

### Predicted

| | |
|---|---|
| **Species** | Mouse, Rat |
| **Dilution info** | - |
| **Notes** | - |

## Flow Cyt (Intra)

### Tested

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1/100 - 1/1000 |
| **Notes** | ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody. |

**Predicted**

| | |
|---|---|
| **Species** | Mouse, Rat |
| **Dilution info** | - |
| **Notes** | - |

## Target data

See full target information Glutathione synthetase

| | |
|---|---|
| **Function** | Catalyzes the production of glutathione from gamma-glutamylcysteine and glycine in an ATP-dependent manner (PubMed:7646467, PubMed:9215686). Glutathione (gamma-glutamylcysteinylglycine, GSH) is the most abundant intracellular thiol in living aerobic cells and is required for numerous processes including the protection of cells against oxidative damage, amino acid transport, the detoxification of foreign compounds, the maintenance of protein sulfhydryl groups in a reduced state and acts as a cofactor for a number of enzymes (PubMed:10369661). Participates in ophthalmate biosynthesis in hepatocytes (By similarity). |

## Storage

| | |
|---|---|
| **Shipped at conditions** | Conditional Ambient |
| **Appropriate short-term storage conditions** | +4°C |
| **Appropriate long-term storage conditions** | -20°C |
| **Storage information** | Stable for 12 months at -20°C |

## Notes

**Patented technology**
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

**What are the advantages of a recombinant monoclonal antibody?**
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

## Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

| | |
|---|---|
| **Activity summary** | Glutathione Synthetase (GSS) sometimes called GSS line is an enzyme that plays a central role in cellular function by catalyzing the ATP-dependent conversion of gamma-glutamylcysteine and glycine into glutathione. This enzyme has a molecular mass of about 70 kDa and exhibits high expression in the liver and red blood cells. It maintains the necessary cellular levels of glutathione a major antioxidant that protects cells from oxidative stress. |
| **Biological function summary** | GSS is responsible for the final step in glutathione biosynthesis. Acting independently GSS operates without forming a larger enzyme complex. Its enzymatic activity ensures adequate production of glutathione which regulates cellular redox homeostasis and detoxification processes. The availability of glutathione is critical for cellular respiration and immunity molecules essential for a well-functioning organism. |
| **Pathways** | The activity of GSS integrates into the gamma-glutamyl cycle and the detoxification pathway. It partners indirectly with enzymes like gamma-glutamylcysteine synthetase which precedes GSS in the glutathione biosynthesis pathway. This relationship positions GSS as an important element in sustaining normal cellular detoxification processes ensuring the neutralization of reactive oxygen species and maintaining the balance of free radicals. |
| **Associated diseases and disorders** | Defects in GSS activity correlate with glutathione synthetase deficiency an autosomal recessive disorder that results in increased oxidative damage and metabolic acidosis. Symptoms range from hemolytic anemia to neurological complications due to impairments in oxidative stress management. The disorder links to proteins involved in antioxidant processes highlighting the importance of GSS in maintaining proper cellular function and disease prevention. |

## Product promise

**Tested**

We have tested this species and application combination and it works. It is covered by our product promise.

**Expected**

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

**Predicted**

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

**Not recommended**

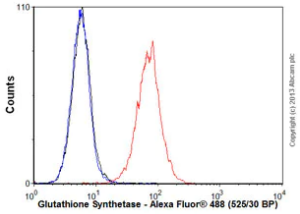
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

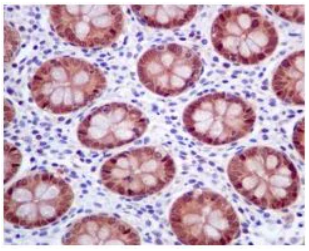
## 5 product images




### Flow Cytometry (Intracellular) - Anti-Glutathione Synthetase antibody [EPR6563] (ab133592)

Glutathione Synthetase Flow Cytometry (Intracellular) staining using rabbit Anti-Glutathione Synthetase antibody

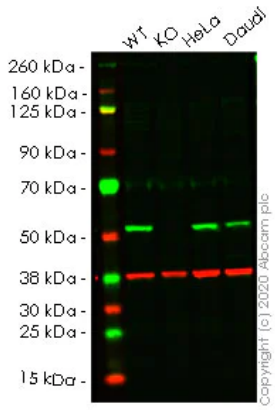
Overlay histogram showing Jurkat cells stained with ab133592 (red line). The cells were fixed with 80% methanol (5 min)/ and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab133592, 1/1000 dilution) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-rabbit IgG (H&L) (ab150077) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (0.1µg/1x$10^6$ cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter.



### Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Glutathione Synthetase antibody [EPR6563] (ab133592)

Glutathione Synthetase Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Glutathione Synthetase antibody

Immunohistochemical analysis of paraffin-embedded Human colon tissue labelling Glutathione Synthetase with ab133592 at 1/50 dilution.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.




## Western blot - Anti-Glutathione Synthetase antibody [EPR6563] (ab133592)

Glutathione Synthetase Western blot staining using rabbit Anti-Glutathione Synthetase antibody

**Lanes 1- 4:** Merged signal (red and green). Green - ab133592 observed at 50 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.
ab133592 was shown to react with GSS in wild-type HEK-293T cells in western blot. Loss of signal was observed when knockout cell line ab266342 (knockout cell lysate ab257460) was used. Wild-type HEK-293T and GSS knockout HEK-293T cell lysates were subjected to SDS-PAGE. Membrane was blocked for 1 hour at room temperature in 0.1% TBST with 3% non-fat dried milk. ab133592 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) overnight at 4°C at a 1 in 1000 dilution and a 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye®800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye®680RD) preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Glutathione Synthetase antibody [EPR6563] (ab133592) at 1/1000 dilution

Lane 1:
Wild-type HEK-293T cell lysate at 20 µg

Lane 2:
GSS knockout HEK-293T cell lysate at 20 µg

Lane 2:
Western blot - Human GSS (Glutathione Synthetase) knockout HEK-293T cell line (ab266342)

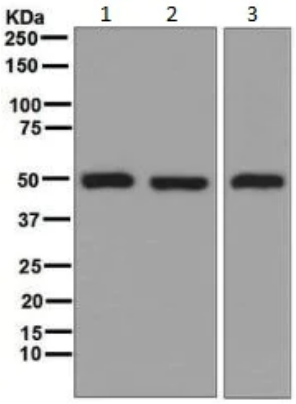
Lane 3:
HeLa cell lysate at 20 µg

Lane 4:
Daudi cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 52 kDa

Observed band size: 50 kDa




## Western blot - Anti-Glutathione Synthetase antibody [EPR6563] (ab133592)

All lanes:
Western blot - Anti-Glutathione Synthetase antibody [EPR6563] (ab133592) at 1/1000 dilution

Lane 1:
293T cell lysate at 10 µg

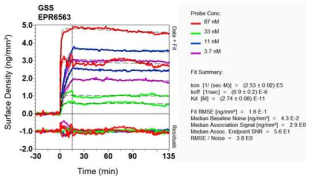
Lane 2:
HeLa cell lysate at 10 µg

Lane 3:
HT-1080 cell lysate at 10 µg

Secondary

All lanes:
HRP labelled Goat anti-Rabbit IgG at 1/2000 dilution

Predicted band size: 52 kDa




## OI-RD Scanning - Anti-Glutathione Synthetase antibody [EPR6563] (ab133592)

We have systematically measured KD (the equilibrium dissociation constant between the antibody and its antigen), of more than 840 recombinant antibodies to assess not only their individual KD values but also to see the average affinity of antibody. Based on the comparison with published literature values for mouse monoclonal antibodies, Recombinant antibodies appear to be on average 1-2 order of magnitude higher affinity.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.