abcam

ab223793

# Anti-Catalase antibody [EPR20198] - BSA and Azide free

Recombinant | RabMAb | KO Validated

## Key facts

| | |
|---|---|
| **Isotype** | IgG |
| **Host species** | Rabbit |
| **Storage buffer** | pH: 7.2 - 7.4 Constituents: PBS |
| **Form** | Liquid |
| **Clonality** | Monoclonal |
| **Immunogen** | The exact immunogen used to generate this antibody is proprietary information. |
| **Carrier free** | Yes |
| **Clone number** | EPR20198 |
| **Purification technique** | Affinity purification Protein A |
| **Concentration** | 0.96 mg/mL The concentration of this product may be batch-dependent<br>Batch concentration finder → |

## Reactivity data

## WB

### Tested

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

| | |
|---|---|
| **Notes** | - |

## ICC/IF

### Tested

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

### Expected

| | |
|---|---|
| **Species** | Rat, Human |
| **Dilution info** | Use at an assay dependent concentration. |
| **Notes** | - |

## Flow Cyt (Intra)

### Tested

| | |
|---|---|
| **Species** | Mouse |
| **Dilution info** | - |
| **Notes** | ab199376 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody. |

### Expected

| | |
|---|---|
| **Species** | Rat, Human |
| **Dilution info** | Use at an assay dependent concentration. |
| **Notes** | - |

# Target data

See full target information Catalase

| | |
|---|---|
| **Function** | Catalyzes the degradation of hydrogen peroxide (H(2)O(2)) generated by peroxisomal oxidases to water and oxygen, thereby protecting cells from the toxic effects of hydrogen peroxide (PubMed:7882369). Promotes growth of cells |

including T-cells, B-cells, myeloid leukemia cells, melanoma cells, mastocytoma cells and normal and transformed fibroblast cells (PubMed:7882369).

## Storage

| | |
|---|---|
| **Shipped at conditions** | Blue Ice |
| **Appropriate short-term storage conditions** | +4°C |
| **Appropriate long-term storage conditions** | +4°C |
| **Storage information** | Do Not Freeze |

## Notes

ab223793 is the carrier-free version of ab209211.

**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.

**Conjugation ready**

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

**Compatibility**

This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

## Supplementary info

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

| | |
|---|---|
| **Activity summary** | Catalase also known as CAT is an enzyme that catalyzes the decomposition of hydrogen peroxide into water and oxygen. This enzyme has a molecular weight of approximately 240 kDa and typically forms a tetramer. Catalase mainly resides in peroxisomes functioning as a peroxisome marker. It expresses abundantly in the liver kidneys and erythrocytes where it plays significant roles in cellular protection against oxidative damage. The presence of Catalase makes it an ideal candidate for use in peroxisome staining and peroxisome image analysis in research. |

| | |
|---|---|
| **Biological function summary** | Catalase contributes to antioxidant defense by breaking down hydrogen peroxide preventing cellular damage. In peroxisomes it works alongside other peroxisomal enzymes to maintain cell health and metabolic regulation. Catalase does not form a complex but interacts closely with other enzymes like superoxide dismutase which dismutates superoxide radicals into less harmful substances. Increased Catalase activity levels can be measured using Catalase activity kits and activity assays allowing us to learn about peroxisome function. |
| **Pathways** | Hydrogen peroxide removal by Catalase is vital in the reactive oxygen species (ROS) metabolic process and plays a part in the cellular response to oxidative stress. Catalase interacts with the glutathione peroxidase pathway safeguarding cells from oxidative stress-related damage. Superoxide dismutase works synergistically with Catalase transforming superoxide anions into hydrogen peroxide before its decomposition by Catalase. These activities highlight the essential role Catalase plays in protecting cells from oxidative stress damage. |
| **Associated diseases and disorders** | Catalase relates to conditions like acatalasemia and diabetes. Acatalasemia a condition caused by a deficiency of Catalase increases the risk of developing diabetes and other oxidative stress-related diseases. Mutations in the CAT gene can lead to decreased Catalase activity contributing to the onset of these conditions. Additionally Catalase works with other proteins like glutathione peroxidase in mitigating the effects of oxidative stress with deficiencies potentially exacerbating complications in diabetes management. |

## 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.

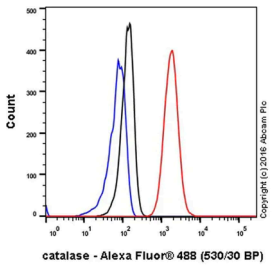
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We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

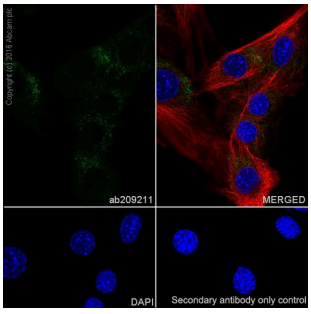
## 5 product images




### Flow Cytometry (Intracellular) - Anti-Catalase antibody [EPR20198] - BSA and Azide free (ab223793)

Catalase Flow Cytometry (Intracellular) staining using rabbit Anti-Catalase antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed C2C12 (Mouse myoblast cell line) cells labeling Catalase with ab209211 at 1/60 dilution (red) compared with Rabbit IgG, monoclonal [EPR25A] - Isotype Control (ab172730; black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody; blue). Goat Anti-Rabbit IgG (Alexa Fluor® 488) at 1/2000 dilution was used as the secondary antibody.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab209211).



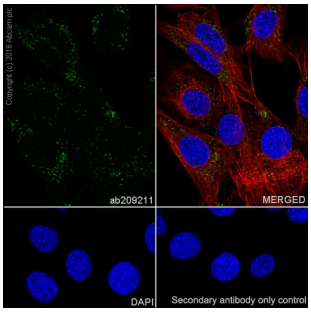

### Immunocytochemistry/ Immunofluorescence - Anti-Catalase antibody [EPR20198] - BSA and Azide free (ab223793)

Catalase Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Catalase antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized C2C12 (Mouse myoblast cell line) cells labeling Catalase with ab209211 at 1/100 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic staining on C2C12 cell line. The nuclear counterstain is DAPI (blue).
Tubulin is detected with Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) (ab195889) at 1/200 dilution (red).

Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) at 1/1000 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab209211).



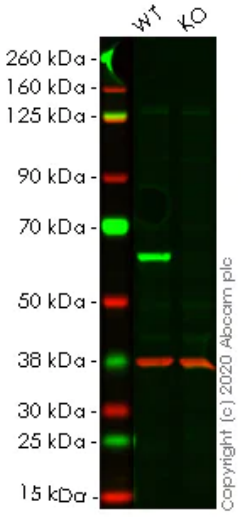

### Immunocytochemistry/ Immunofluorescence - Anti-Catalase antibody [EPR20198] - BSA and Azide free (ab223793)

Catalase Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Catalase antibody

ImmunoFluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized NIH/3T3 (Mouse embryonic fibroblast cell line) cells labeling Catalase with ab209211 at 1/100 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic staining on NIH/3T3 cell line. The nuclear counterstain is DAPI (blue).
Tubulin is detected with Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) (ab195889) at 1/200 dilution (red).

Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) at 1/1000 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab209211).




## Western blot - Anti-Catalase antibody [EPR20198] - BSA and Azide free (ab223793)

Catalase Western blot staining using rabbit Anti-Catalase antibody

This data was developed using the same antibody clone in a different buffer formulation (ab209211).
**Lanes 1-2:** Merged signal (red and green). Green - ab209211 observed at 60 kDa. Red - loading control ab8245 observed at 37 kDa.

ab209211 Anti-Catalase antibody [EPR20198] was shown to specifically react with Catalase in wild-type HeLa cells. Loss of signal was observed when knockout cell line ab265250 (knockout cell lysate ab256859) was used. Wild-type and Catalase knockout samples were subjected to SDS-PAGE. ab209211 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated overnight at 4°C at 1 in 2000 and 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-Catalase antibody [EPR20198] - Peroxisome Marker (ab209211) at 1/2000 dilution

Lane 1:
Wild-type HeLa cell lysate at 20 µg

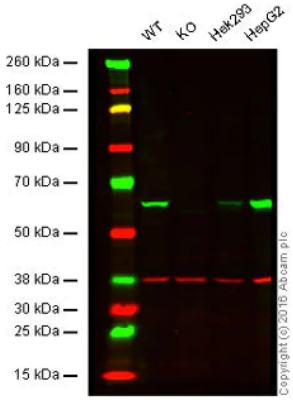
Lane 2:
CAT knockout HeLa cell lysate at 20 µg

Lane 2:
Western blot - Human CAT (Catalase) knockout HeLa cell line (ab265250)

Performed under reducing conditions.

Predicted band size: 60 kDa

Observed band size: 60 kDa




## Western blot - Anti-Catalase antibody [EPR20198] - BSA and Azide free (ab223793)

This WB data was generated using the same anti-Catalase antibody clone [EPR20198] in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (cat# ab209211).

**Lanes 1 - 4:** Merged signal (red and green). Green - ab209211 observed at 60 kDa. Red - loading control, ab8245, observed at 37 kDa.
ab209211 was shown to specifically react with CAT when CAT knockout samples were used. Wild-type and CAT knockout samples were subjected to SDS-PAGE. ab209211 and ab8245 (Mouse anti GAPDH loading control) were incubated overnight at 4°C at 1/2000 dilution and 1/10000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) ab216776 secondary antibodies at 1/10000 dilution for 1 hour at room temperature before imaging.

All lanes:

Western blot - Anti-Catalase antibody [EPR20198] - Peroxisome Marker (ab209211) at 1/2000 dilution

Lane 1:
Wild-type HAP1 whole cell lysate at 20 µg

Lane 2:
CAT knockout HAP1 whole cell lysate at 20 µg

Lane 3:
Hek293 whole cell lysate at 20 µg

Lane 4:
HepG2 whole cell lysate at 20 µg

Predicted band size: 60 kDa

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