Product datasheet

Anti-IL-1 beta antibody ab9787

Overview

Product name Anti-IL-1 beta antibody
Description Rabbit polyclonal to IL-1 beta
Host species Rabbit
Specificity This antibody is used in our Rat IL-1beta EDK and was tested against the following rat growth factors at 50ng/ml to determine if there was any cross reactivity: GM-CSF, IL1alpha, IL-2, IL-4, IL-10, SCF, & TNFalpha. No significant cross reactivity was detected. The antibody has not been tested against endogenous IL1beta, only recombinant protein and we cannot guarantee it will detect endogenous protein.

Tested applications Suitable for: WB, Neutralising, IHC-Fr, IHC-P, IHC-FoFr, Sandwich ELISA
Species reactivity Reacts with: Rat
Immunogen Recombinant full length protein corresponding to Rat IL-1 beta aa 2-268. Sequence:

```
MVPIRQLHCR LRDEQQKCLVLSDPCELKAL
HLNGQNISSQQ VVFSMSFVQGEHTSDKIPVA
GLGKLGLNLG YLVLCMDGTPV LQLESVDPKQ
YPKKKMEKRF VFNKIEVKTKEFESAQFPN
WYISTSQAEHP VPVFLGNSNG RDIVDFTMEPVSS
```

Database link: Q63264

Positive control recombinant rat IL-1 beta (lower limit of detection: 1.95 ng/lane)

Properties

Form Lyophilised: Reconstitute with 200µl of sterile water. Please note that if you receive this product in liquid form it has already been reconstituted as described and no further reconstitution is necessary.


Storage buffer PBS, pH 7.4, no preservative, sterile filtered

Purity Immunogen affinity purified

Clonality Polyclonal
**Isotype**
IgG

**Light chain type**
unknown

## Applications

Our **Abpromise guarantee** covers the use of ab9787 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

<table>
<thead>
<tr>
<th>Application</th>
<th>Abreviews</th>
<th>Notes</th>
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<tbody>
<tr>
<td>WB</td>
<td>★★★★★</td>
<td>Use a concentration of 0.1 - 0.2 μg/ml.</td>
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<tr>
<td>Neutralising</td>
<td></td>
<td>Use at an assay dependent concentration. To yield one-half maximal inhibition ([\text{ND}_{50}]) of the biological activity of IL1 beta (0.20 ng/ml), a concentration of 0.09 - 0.14 μg/ml of this antibody is required.</td>
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<tr>
<td>IHC-Fr</td>
<td></td>
<td>Use at an assay dependent concentration. PubMed: 20187933</td>
</tr>
<tr>
<td>IHC-P</td>
<td></td>
<td>Use at an assay dependent concentration. PubMed: 22315633</td>
</tr>
<tr>
<td>IHC-FoFr</td>
<td>★★★★★</td>
<td>Use at an assay dependent concentration. PubMed: 20649973</td>
</tr>
<tr>
<td>Sandwich ELISA</td>
<td></td>
<td>Use at an assay dependent concentration. To detect Rat IL-1 beta by sandwich ELISA (using 100 μl/well antibody solution) a concentration of 0.5 - 2.0 μg/ml of ab9787 is required. This antigen affinity purified antibody, in conjunction with a suitable detection antibody, allows the detection of at least 0.2 - 0.4 ng/well of recombinant Rat IL-1 beta.</td>
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</table>

## Target

### Function
Potent proinflammatory cytokine. Initially discovered as the major endogenous pyrogen, induces prostaglandin synthesis, neutrophil influx and activation, T-cell activation and cytokine production, B-cell activation and antibody production, and fibroblast proliferation and collagen production. Promotes Th17 differentiation of T-cells.

### Tissue specificity
Expressed in activated monocytes/macrophages (at protein level).

### Sequence similarities
Belongs to the IL-1 family.

### Post-translational modifications
Activation of the IL1B precursor involves a CASP1-catalyzed proteolytic cleavage. Processing and secretion are temporarily associated.

### Cellular localization
Cytoplasm, cytosol. Lysosome. Secreted, exosome. Cytoplasmic vesicle, autophagosome. Secreted. The precursor is cytosolic. In response to inflammasome-activating signals, such as ATP for NLRP3 inflammasome or bacterial flagellin for NLRC4 inflammasome, cleaved and secreted. IL1B lacks any known signal sequence and the pathway(s) of its secretion is(are) not yet fully understood (PubMed:24201029). On the basis of experimental results, several unconventional secretion mechanisms have been proposed. 1. Secretion via secretory lysosomes: a fraction of CASP1 and IL1B precursor may be incorporated, by a yet undefined mechanism, into secretory lysosomes that undergo Ca(2+)-dependent exocytosis with release of mature IL1B (PubMed:15192144). 2. Secretory autophagy: IL1B-containing autophagosomes may fuse with endosomes or multivesicular bodies (MVBs) and then merge with the plasma membrane releasing soluble IL1B or IL1B-containing exosomes (PubMed:24201029). However,
Autophagy impacts IL1B production at several levels and its role in secretion is still controversial. 3. Secretion via exosomes: ATP-activation of P2RX7 leads to the formation of MVBs containing exosomes with entrapped IL1B, CASP1 and other inflammasome components. These MVBs undergo exocytosis with the release of exosomes. The release of soluble IL1B occurs after the lysis of exosome membranes (By similarity). 4. Secretion by microvesicle shedding: activation of the ATP receptor P2RX7 may induce an immediate shedding of membrane-derived microvesicles containing IL1B and possibly inflammasome components. The cytokine is then released in the extracellular compartment after microvesicle lysis (PubMed:11728343). 5. Release by translocation through permeabilized plasma membrane. This may occur in cells undergoing pyroptosis due to sustained activation of the inflammasome (By similarity). These mechanisms may not be not mutually exclusive.

Images

Immunohistochemical analysis of rat endometrial tissue, staining IL-1 beta with ab9787.

Tissue was taken from pregnant rats with implantation failure. Antigen retrieval was by heat mediation in a citrate buffer (pH 6) followed by blocking with 1% BSA for 30 minutes. Sections were incubated with primary antibody (1/50) overnight at 4°C. An HRP-goat anti-rabbit IgG was used as the secondary antibody (1/200). Staining was detected using DAB.

Immunohistochemical analysis of rat brain tissue, staining IL-1 beta with ab9787.

Tissue was taken from rats with middle cerebral artery occlusion either untreated (left) or treated with specific MEK1/2 inhibitor U0126. Samples were fixed for 10 minutes in ice-cold acetone and then rehydrated in PBS containing 0.3% Triton X-100 for 15 minutes. The tissues were then permeabilized and blocked for 1 hour in blocking solution containing PBS, 0.3% Triton X-100, 1% BSA, and 5% normal donkey serum. Samples were incubated overnight at 4°C with primary antibody (1/400) and a Cy2-conjugated donkey anti-rabbit IgG was used as the secondary antibody.
All lanes: Anti-IL-1 beta antibody (ab9787) at 0.2 µg/ml

Lane 1: MultiMark MultiColor Standard (Invitrogen)
Lane 2: 250 ng/lane
Lane 3: 125 ng/lane
Lane 4: 62.5 ng/lane
Lane 5: 31.25 ng/lane
Lane 6: 15.6 ng/lane
Lane 7: 7.8 ng/lane
Lane 8: 3.9 ng/lane
Lane 9: 1.95 ng/lane

Observed band size: 17.3 kDa

why is the actual band size different from the predicted?

The lower detection limit of Ab9787 lies at approximately 1.95 ng.

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