# Overview

**Product name**
Anti-JAK2 (phospho Y1007 + Y1008) antibody [E132]

**Description**
Rabbit monoclonal [E132] to JAK2 (phospho Y1007 + Y1008)

**Host species**
Rabbit

**Specificity**
The antibody is phospho-specific and only detects phosphorylated JAK2 on Tyrosine 1007 and 1008 (pY1007+Y1008). According to our ELISA results, this antibody preferentially recognizes phospho Y1007. Stimulation may be required to allow detection of the phosphorylated protein. Please see images below for recommended treatment conditions and positive controls.

**Tested applications**
Suitable for: ELISA, WB, IHC-Fr, ICC/IF, Flow Cyt, IHC-P, IP, Dot blot

**Species reactivity**
Reacts with: Mouse, Rat, Human

**Immunogen**
Synthetic peptide (the amino acid sequence is considered to be commercially sensitive) within Human JAK2 (phospho Y1007 + Y1008). The exact sequence is proprietary.

**Positive control**
WB: Jurkat or K562 cells (treated with Pervanadate). IHC-P: Human lung adenocarcinoma tissue. ICC/IF: Jurkat cells (treated with Pervanadate). Flow Cyt: Jurkat starved of serum for 16 hours then treated with 1mM Pervanadate for 30 minutes.

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

This product is a recombinant rabbit monoclonal antibody.

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## Properties

**Form**
Liquid

**Storage instructions**
Shipped at 4°C. Store at +4°C short term (1-2 weeks). Upon delivery aliquot. Store at -20°C. Avoid freeze / thaw cycle.

**Storage buffer**
pH: 7.20
Preservative: 0.01% Sodium azide
Constituents: 49% PBS, 50% Glycerol, 0.05% BSA

**Purity**
IgG fraction

**Clonality**
Monoclonal
Clone number: E132  
Isotype: IgG

Applications

Our Abpromise guarantee covers the use of ab32101 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>
</tr>
</thead>
<tbody>
<tr>
<td>ELISA</td>
<td></td>
<td>Use at an assay dependent concentration.</td>
</tr>
<tr>
<td>WB</td>
<td>📏🌟🌟🌟🌟</td>
<td>1/1000 - 1/10000. Detects a band of approximately 120 kDa (predicted molecular weight: 130 kDa). The samples may require stimulation (E.g., Jurkat cells treated with pervanadate for 5 min)</td>
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<tr>
<td>IHC-Fr</td>
<td></td>
<td>Use at an assay dependent concentration. PubMed: 21420414</td>
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<tr>
<td>ICC/IF</td>
<td>1/1000</td>
<td></td>
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<tr>
<td>Flow Cyt</td>
<td>1/20</td>
<td></td>
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<tr>
<td>IHC-P</td>
<td></td>
<td>Use at an assay dependent concentration.</td>
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<tr>
<td>IP</td>
<td>1/50</td>
<td></td>
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<tr>
<td>Dot blot</td>
<td>1/1000</td>
<td></td>
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Target

Function
Non-receptor tyrosine kinase involved in various processes such as cell cycle progression, apoptosis, mitotic recombination, genetic instability and histone modifications. In the cytoplasm, plays a pivotal role in signal transduction via its association with cytokine receptors, which constitutes an initiating step in signaling for many members of the cytokine receptor superfamily including the receptors for growth hormone (GHR), prolactin (PRLR), leptin (LEPR), erythropoietin (EPOR), granulocyte-macrophage colony-stimulating factor (CSF2), thrombopoietin (THPO) and multiple interleukins. Following stimulation with erythropoietin (EPO) during erythropoiesis, it is autophosphorylated and activated, leading to its association with erythropoietin receptor (EPOR) and tyrosine phosphorylation of residues in the EPOR cytoplasmic domain. Also involved in promoting the localization of EPOR to the plasma membrane. Also acts downstream of some G-protein coupled receptors. Plays a role in the control of body weight (By similarity). Mediates angiotensin-2-induced ARHGEF1 phosphorylation. In the nucleus, plays a key role in chromatin by specifically mediating phosphorylation of 'Tyr-41' of histone H3 (H3Y41ph), a specific tag that promotes exclusion of CBX5 (HP1 alpha) from chromatin.

Tissue specificity
Expressed in blood, bone marrow and lymph node.

Involvement in disease
Note=Chromosomal aberrations involving JAK2 are found in both chronic and acute forms of eosinophilic, lymphoblastic and myeloid leukemia. Translocation t(8;9)(p22;p24) with PCM1 links the protein kinase domain of JAK2 to the major portion of PCM1. Translocation t(9;12) (p24;p13) with ETV6.
Defects in JAK2 are a cause of susceptibility to Budd-Chiari syndrome (BCS) [MIM:600880]. It is a syndrome caused by obstruction of hepatic venous outflow involving either the hepatic veins or the terminal segment of the inferior vena cava. Obstructions are generally caused by thrombosis and lead to hepatic congestion and ischemic necrosis. Clinical manifestations observed in the majority of patients include hepatomegaly, right upper quadrant pain and abdominal ascites. Budd-Chiari syndrome is associated with a combination of disease states including primary myeloproliferative syndromes and thrombophilia due to factor V Leiden, protein C deficiency and antithrombin III deficiency. Budd-Chiari syndrome is a rare but typical complication in patients with polycythemia vera.

Defects in JAK2 are a cause of polycythemia vera (PV) [MIM:263300]. A myeloproliferative disorder characterized by abnormal proliferation of all hematopoietic bone marrow elements, erythroid hyperplasia, an absolute increase in total blood volume, but also by myeloid leukocytosis, thrombocytosis and splenomegaly.

Defects in JAK2 gene may be a cause of essential thrombocythemia (ET) [MIM:187950]. ET is characterized by elevated platelet levels due to sustained proliferation of megakaryocytes, and frequently lead to thrombotic and haemorrhagic complications.

Defects in JAK2 are a cause of myelofibrosis (MYELOF) [MIM:254450]. Myelofibrosis is a disorder characterized by replacement of the bone marrow by fibrous tissue, occurring in association with a myeloproliferative disorder. Clinical manifestations may include anemia, pallor, splenomegaly, hypermetabolic state, petechiae, ecchymosis, bleeding, lymphadenopathy, hepatomegaly, portal hypertension.

Defects in JAK2 are a cause of acute myelogenous leukemia (AML) [MIM:601626]. AML is a malignant disease in which hematopoietic precursors are arrested in an early stage of development.

**Sequence similarities**

Belongs to the protein kinase superfamily. Tyr protein kinase family. JAK subfamily.
Contains 1 FERM domain.
Contains 1 protein kinase domain.
Contains 1 SH2 domain.

**Domain**

Possesses 2 protein kinase domains. The second one probably contains the catalytic domain, while the presence of slight differences suggest a different role for protein kinase 1.

**Post-translational modifications**

Autophosphorylated, leading to regulate its activity. Leptin promotes phosphorylation on tyrosine residues, including phosphorylation on Tyr-813. Autophosphorylation on Tyr-119 in response to EPO down-regulates its kinase activity. Autophosphorylation on Tyr-868, Tyr-966 and Tyr-972 in response to growth hormone (GH) are required for maximal kinase activity.

**Cellular localization**

Endomembrane system. Nucleus.

Images

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Immunocytochemistry/Immunofluorescence analysis of Jurkat +/- pervanadate (1mM, 30min) and Jurkat + pervanadate (1mM, 30min) + LP cells labelling JAK2 (phospho Y1007 + Y1008) with ab32101 at a dilution of 1/1000. Cells were fixed with 4% paraformaldehyde and permeabilized with 0.1% tritonX-100. ab150077 (goat anti-rabbit IgG Alexa Fluor® 488) (1/1000) was used as the secondary antibody. The cells were co-stained with ab195889 (Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594)) at a 1/200 dilution. Nuclei counterstained with DAPI (blue).
**Western blot - Anti-JAK2 (phospho Y1007 + Y1008) antibody [E132] (ab32101)**

**All lanes**: Anti-JAK2 (phospho Y1007 + Y1008) antibody [E132] (ab32101) at 1/5000 dilution

**Lane 1**: Untreated Jurkat cells whole cell lysates

**Lane 2**: Jurkat cells were treated with 50mM Pervanadate for 5 minutes whole cell lysates

**Lane 3**: Jurkat cells were treated with 50mM Pervanadate for 5 minutes whole cell lysates. Then the membrane was incubated with Alkaline phosphatase.

Lysates/proteins at 10 µg per lane.

**Secondary**

**All lanes**: Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

**Predicted band size**: 130 kDa

**Observed band size**: 120 kDa

**Exposure time**: 5 seconds

Blocking and diluting buffer 5% NFDM/TBST

ab32101 showing positive staining in Lung adenocarcinoma tissue.
Dot blot analysis of JAK2 (phospho Y1007 & Y1008) phosphopeptide (Lane 1), JAK2 (phospho Y1007) phosphopeptide (Lane 2), JAK2 (phospho Y1008) phosphopeptide (Lane 3) and JAK2 non-phospho peptide (Lane 4) labelling JAK2 (phospho Y1007 & Y1008) with ab32101 at a dilution of 1/1000. A Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated (ab97051) was used as the secondary antibody at a dilution of 1/20,000. Blocking buffer: 5% NFDM/TBST. Dilution buffer: 5% NFDM/TBST.

All lanes: Anti-JAK2 (phospho Y1007 + Y1008) antibody [E132] (ab32101) at 1/1000 dilution

Lane 1: Jurkat (Human T cell leukemia T lymphocyte) whole cell lysates
Lane 2: Jurkat (Human T cell leukemia T lymphocyte) treated with 50mM Pervanadate for 5 minutes whole cell lysates

Lysates/proteins at 15 µg per lane.

Secondary

All lanes: Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 130 kDa
Observed band size: 120 kDa
Additional bands at: 60 kDa. We are unsure as to the identity of these extra bands.

Blocking and diluting buffer: 5% NFDM/TBST

Exposure time:
Left image: 1 second
Right image: 5 minutes
Flow Cytometry analysis of Jurkat (human acute T cell leukemia) cells starved of serum for 16 hours then treated with 1 mM Pervanadate for 30 minutes labeling JAK2 (phospho Y1007 + Y1008) with ab32101 at 1/20 dilution (10 ug/mL) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluor®488) at 1/2000 dilution was used as the secondary antibody. Rabbit monoclonal IgG (Black) was used as the isotype control, cells without incubation with primary antibody and secondary antibody (Blue) was used as the unlabeled control.

Direct ELISA antigen dose-response curve using ab32101 at 0~1000 ng/mL. Antigen concentration of 100 ng/mL. An Alkaline Phosphatase-conjugated AffiniPure Goat Anti-Rabbit IgG(H+L) (1/2500) was used as the secondary antibody.

This antibody preferentially recognizes phospho Y1007. When the concentration of peptides is higher than 100 ng/mL, it also recognizes phospho Y1008.

Direct ELISA antigen dose-response curve using ab32101 at 0~1000 ng/mL. Antigen concentration of 10 ng/mL. An Alkaline Phosphatase-conjugated AffiniPure Goat Anti-Rabbit IgG(H+L) (1/2500) was used as the secondary antibody.

This antibody preferentially recognizes phospho Y1007. When the concentration of peptides is lower than 10 ng/mL, it cannot recognize phospho Y1008.
Analysis of immunogen phosphopeptide (A) and non phosphopeptide (B). Antibody used at 1/1000 dilution.

Lane 1: Rat uterine cell line - whole cell lysate. Treated with 1µg/mL Prolactin for 0 hours.
Lane 2: Rat uterine cell line - whole cell lysate. Treated with 1µg/mL Prolactin for 15 minutes.
Lane 3: Rat uterine cell line - whole cell lysate. Treated with 1µg/mL Prolactin for 30 minutes.
Lane 4: Rat uterine cell line - whole cell lysate. Treated with 1µg/mL Prolactin for 1 hour.
Lane 5: Rat uterine cell line - whole cell lysate. Treated with 1µg/mL Prolactin for 2 hours.
Lane 6: Rat uterine cell line - whole cell lysate. Treated with 1µg/mL Prolactin for 4 hours.
Lane 7: Rat uterine cell line - whole cell lysate. Treated with 1µg/mL Prolactin for 6 hours.
Lane 8: Rat uterine cell line - whole cell lysate. Treated with 1µg/mL Prolactin for 24 hours.

Lysates/proteins at 30 µg per lane.

Secondary

All lanes: An HRP-conjugated donkey anti-rabbit polyclonal. at 1/10000 dilution
Developed using the ECL technique.

Performed under reducing conditions.

**Predicted band size:** 130 kDa  
**Observed band size:** 110 kDa  
**Additional bands at:** 55 kDa (possible non-specific binding)

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-JAK2 (phospho Y1007 + Y1008) antibody [E132] (ab32101)  
ab32101 showing positive staining in Ovarian carcinoma tissue.

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-JAK2 (phospho Y1007 + Y1008) antibody [E132] (ab32101)  
ab32101 showing positive staining in Cervical carcinoma tissue.
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-JAK2 (phospho Y1007 + Y1008) antibody [E132] (ab32101)

ab32101 showing positive staining in Endometrial carcinoma tissue.

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