abcam

ab32099

Anti-beta Arrestin 1 antibody [E274]

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, 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	E274
Purification technique	Affinity purification Protein A
Specificity	The antibody immunogen shares 90% homology with ARRB2 (P32121) which has similar MW than ARRB1. Therefore, it is likely that the antbody will cross-react with ARRB2. However, we haven't performed any experiment with recombinant protein to confirm this.
Concentration	1.461 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Not recommended

Species	Mouse, Human, Rat, Cow

Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/500 - 1/1000
Notes	-

Species	Human
Dilution info	1/500 - 1/1000
Notes	-

Predicted

Species	Rat, Cow
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100 - 1/150
Notes	-

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Rat, Cow
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/10 - 1/20
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Rat, Cow
Dilution info	-
Notes	-

Target data

See full target information ARRB1

Function

Functions in regulating agonist-mediated G-protein coupled receptor (GPCR) signaling by mediating both receptor desensitization and resensitization processes (PubMed:37209686, PubMed:38175886). During homologous desensitization, beta-arrestins bind to the GPRK-phosphorylated receptor and sterically preclude its coupling to the cognate G-protein; the binding appears to require additional receptor determinants exposed only in the active receptor conformation. The beta-arrestins target many receptors for internalization by acting as endocytic adapters (CLASPs, clathrin-associated sorting proteins) and recruiting the GPRCs to the adapter protein 2 complex 2 (AP-2) in clathrin-coated pits (CCPs). However, the extent of beta-arrestin involvement appears to vary significantly depending on the receptor, agonist and cell type. Internalized arrestin-receptor complexes traffic to

intracellular endosomes, where they remain uncoupled from G-proteins. Two different modes of arrestin-mediated internalization occur. Class A receptors, like ADRB2, OPRM1, ENDRA, D1AR and ADRA1B dissociate from beta-arrestin at or near the plasma membrane and undergo rapid recycling. Class B receptors, like AVPR2, AGTR1, NTSR1, TRHR and TACR1 internalize as a complex with arrestin and traffic with it to endosomal vesicles, presumably as desensitized receptors, for extended periods of time. Receptor resensitization then requires that receptor-bound arrestin is removed so that the receptor can be dephosphorylated and returned to the plasma membrane. Involved in internalization of P2RY4 and UTP-stimulated internalization of P2RY2. Involved in phosphorylation-dependent internalization of OPRD1 ands subsequent recycling. Involved in the degradation of cAMP by recruiting cAMP phosphodiesterases to ligand-activated receptors. Beta-arrestins function as multivalent adapter proteins that can switch the GPCR from a G-protein signaling mode that transmits short-lived signals from the plasma membrane via small molecule second messengers and ion channels to a beta-arrestin signaling mode that transmits a distinct set of signals that are initiated as the receptor internalizes and transits the intracellular compartment. Acts as a signaling scaffold for MAPK pathways such as MAPK1/3 (ERK1/2). ERK1/2 activated by the beta-arrestin scaffold is largely excluded from the nucleus and confined to cytoplasmic locations such as endocytic vesicles, also called beta-arrestin signalosomes. Recruits c-Src/SRC to ADRB2 resulting in ERK activation. GPCRs for which the beta-arrestin-mediated signaling relies on both ARRB1 and ARRB2 (codependent regulation) include ADRB2, F2RL1 and PTH1R. For some GPCRs the beta-arrestin-mediated signaling relies on either ARRB1 or ARRB2 and is inhibited by the other respective beta-arrestin form (reciprocal regulation). Inhibits ERK1/2 signaling in AGTR1- and AVPR2-mediated activation (reciprocal regulation). Is required for SP-stimulated endocytosis of NK1R and recruits c-Src/SRC to internalized NK1R resulting in ERK1/2 activation, which is required for the antiapoptotic effects of SP. Is involved in proteinase-activated F2RL1-mediated ERK activity. Acts as a signaling scaffold for the AKT1 pathway. Is involved in alpha-thrombin-stimulated AKT1 signaling. Is involved in IGF1-stimulated AKT1 signaling leading to increased protection from apoptosis. Involved in activation of the p38 MAPK signaling pathway and in actin bundle formation. Involved in F2RL1-mediated cytoskeletal rearrangement and chemotaxis. Involved in AGTR1-mediated stress fiber formation by acting together with GNAQ to activate RHOA. Appears to function as signaling scaffold involved in regulation of MIP-1-beta-stimulated CCR5-dependent chemotaxis. Involved in attenuation of NF-kappa-B-dependent transcription in response to GPCR or cytokine stimulation by interacting with and stabilizing CHUK. May serve as nuclear messenger for GPCRs. Involved in OPRD1-stimulated transcriptional regulation by translocating to CDKN1B and FOS promoter regions and recruiting EP300 resulting in acetylation of histone H4. Involved in regulation of LEF1 transcriptional activity via interaction with DVL1 and/or DVL2 Also involved in regulation of receptors other than GPCRs. Involved in Toll-like receptor and IL-1 receptor signaling through the interaction with TRAF6 which prevents TRAF6 autoubiquitination and oligomerization required for activation of NF-kappa-B and JUN. Binds phosphoinositides. Binds inositolhexakisphosphate (InsP6) (By similarity). Involved in IL8-mediated granule release in neutrophils. Required for atypical chemokine receptor ACKR2-induced RAC1-LIMK1-PAK1-dependent phosphorylation of cofilin (CFL1) and for the up-regulation of ACKR2 from endosomal compartment to cell membrane, increasing its efficiency in chemokine uptake and degradation. Involved in the internalization of the atypical chemokine receptor ACKR3. Negatively regulates the NOTCH signaling pathway by mediating the ubiquitination and degradation of NOTCH1 by ITCH (PubMed:23886940). Participates in the recruitment of the ubiquitin-protein

ligase to the receptor (PubMed:23886940). Involved in some MRGPRE-mediated signaling required to improve glucose tolerance: promotes phosphorylation of ALDOA downstream of MRGPRE activation, increasing glycolysis and leading to GLP-1 secretion (PubMed:40446798).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

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	Beta Arrestin 1 also known as β-arrestin b-arrestin or ARRB1 is a protein that plays an important role in cell signaling mechanisms. It has a molecular mass of approximately 47 kDa and is expressed in various tissues with high expression levels in the brain and testes. Beta Arrestin 1 binds to G protein-coupled receptors (GPCRs) leading to the termination of coupling between the GPCRs and G proteins.

	This function is essential in regulating the receptor's signal and mediating receptor desensitization.
Biological function summary	Beta Arrestin 1 functions beyond GPCR desensitization by participating in receptor internalization and the initiation of alternative signaling pathways known as arrestin-mediated signaling. It acts as part of a greater complex with clathrin and adaptin which facilitates the endocytosis of GPCRs. In doing so beta Arrestin 1 can modulate different signaling pathways independently of G proteins influencing various cellular responses.
Pathways	Beta Arrestin 1 integrates into the MAPK/ERK pathway and the PI3K/AKT pathway. These pathways are important for regulating diverse cellular processes including proliferation differentiation and survival. Through the MAPK/ERK pathway beta Arrestin 1 is connected to proteins such as extracellular signal-regulated kinases (ERK1/2). In the context of the PI3K/AKT pathway it associates with phosphoinositide 3-kinase helping to control cell growth and survival mechanisms.
Associated diseases and disorders	Disruptions involving beta Arrestin 1 have implications in cancer and cardiovascular diseases. In cancer abnormal beta Arrestin 1 activity can influence tumor growth by altering cell proliferation and survival signaling pathways. It links to proteins like ERK1/2 and PI3K which can drive oncogenic processes. In cardiovascular disorders beta Arrestin 1 is implicated in heart failure where its altered activity affects cardiovascular signaling pathways influencing heart function and response to stress.

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

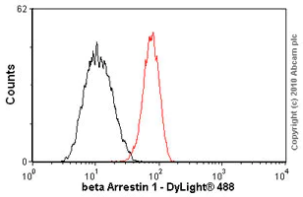
We do not recommend this combination. It is not covered by our product promise.

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:

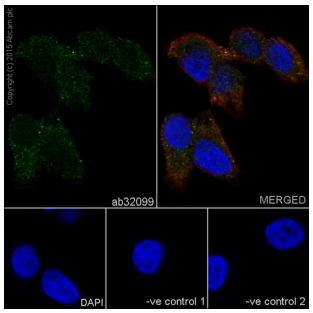
8 product images



Flow Cytometry (Intracellular) - Anti-beta Arrestin 1 antibody [E274] (ab32099)

Beta Arrestin 1 Flow Cytometry (Intracellular) staining using rabbit Anti-beta Arrestin 1 antibody

Overlay histogram showing PC3 cells stained with unpurified ab32099 (red line). The cells were fixed with 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 (unpurified ab32099, 1/10 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-rabbit IgG (H+L) (ab96899) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit monoclonal IgG (1µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a decreased signal in PC3 cells fixed with 4% paraformaldehyde (10 min)/permeabilized in 0.1% PBS-Tween used under the same conditions.

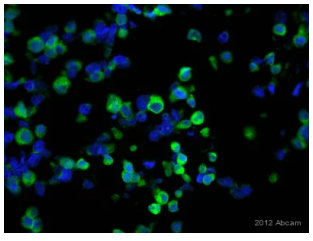


Immunocytochemistry/ Immunofluorescence - Anti-beta Arrestin 1 antibody [E274] (ab32099)

Beta Arrestin 1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-beta Arrestin 1 antibody

Immunocytochemistry/Immunofluorescence analysis of PC-3 cells labelling beta Arrestin 1 with purified ab32099 at a dilution of 1/150. Cells were fixed with 4% paraformaldehyde and permeabilized with 0.1% Triton X-100. ab150077, an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000) was used as the secondary antibody. DAPI (blue) was used as the nuclear counterstain. ab7291, a mouse anti-tubulin (1/1000) and ab150120, an Alexa Fluor® 594-conjugated goat anti-mouse IgG (1/1000) were also used.
Control 1: primary antibody (1/150) and secondary antibody, ab150120, an Alexa Fluor® 594-conjugated goat anti-mouse IgG (1/1000).

Control 2: ab7291 (1/1000) and secondary antibody, ab150077, an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000).

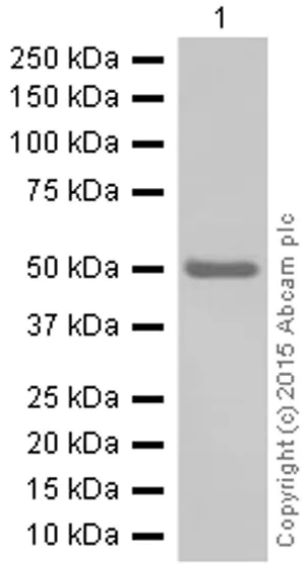


This image is courtesy of an anonymous customer review.

Immunocytochemistry/ Immunofluorescence - Anti-beta Arrestin 1 antibody [E274] (ab32099)

Beta Arrestin 1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-beta Arrestin 1 antibody

Unpurified ab32099 staining beta Arrestin 1 in C4-2B (Human prostate cancer cell line) by ICC/IF (Immunocytochemistry/immunofluorescence).
Cells were fixed with paraformaldehyde and blocked with 1% serum for 1 hour at 21°C. Samples were incubated with primary antibody (1/100 in diluent) for 1 hour at 21°C. An Alexa Fluor® 488-conjugated goat anti-rabbit polyclonal IgG (1/200) was used as the secondary antibody.



Western blot - Anti-beta Arrestin 1 antibody [E274] (ab32099)

Blocking and dilution buffer: 5% NFDM/TBST
All lanes:
Western blot - Anti-beta Arrestin 1 antibody [E274] (ab32099) at 1/1000 dilution

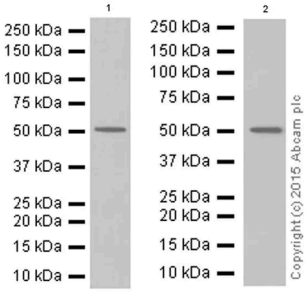
All lanes:
Jurkat whole cell lysate at 20 µg

Secondary

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

Predicted band size: 47 kDa

Observed band size: 50 kDa



Western blot - Anti-beta Arrestin 1 antibody [E274] (ab32099)

Beta Arrestin 1 Western blot staining using rabbit Anti-beta Arrestin 1 antibody

Blocking and dilution buffer: 5% NFDM/TBST
All lanes:
Western blot - Anti-beta Arrestin 1 antibody [E274] (ab32099) at 1/2000 dilution

Lane 1:
HEK293 whole cell lysate at 10 µg

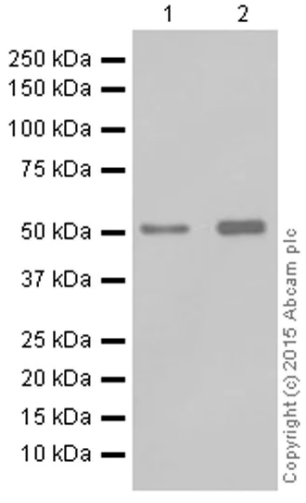
Lane 2:
SH-SY5Y whole cell lysate at 10 µg

Secondary

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

Predicted band size: 47 kDa

Observed band size: 50 kDa



Western blot - Anti-beta Arrestin 1 antibody [E274] (ab32099)

Beta Arrestin 1 Western blot staining using rabbit Anti-beta Arrestin 1 antibody

Blocking and dilution buffer: 5% NFDM/TBST
All lanes:
Western blot - Anti-beta Arrestin 1 antibody [E274] (ab32099) at 1/1000 dilution

Lane 1:
C2C12 whole cell lysate at 20 µg

Lane 2:
PC-12 whole cell lysate at 20 µg

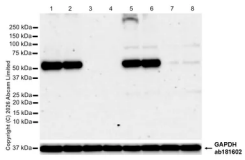
Secondary

All lanes:

Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 47 kDa

Observed band size: 50 kDa



Western blot - Anti-beta Arrestin 1 antibody [E274] (ab32099)

Beta Arrestin 1 Western blot staining using rabbit Anti-beta Arrestin 1 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST.

The tissue samples were kindly provided by GemPharmatech. C57BL/6JGpt wildtype mice and Arrb1-KO homozygous mice (Strain ID: T014150).

In Western blot, Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602) (1:200000) (36KDa).

All lanes:
Western blot - Anti-beta Arrestin 1 antibody [E274] (ab32099) at 1/1000 dilution

Lane 1:
Wild-type mouse cerebral cortex tissue lysate (male case1) at 20 µg

Lane 2:
Wild-type mouse cerebral cortex tissue lysate (male case2) at 20 µg

Lane 3:
Arrb1 knockout mouse cerebral cortex tissue lysate (male case1) at 20 µg

Lane 4:
Arrb1 knockout mouse cerebral cortex tissue lysate (male case2) at 20 µg

Lane 5:
Wild-type mouse lymph node tissue lysate (male case1) at 20 µg

Lane 6:
Wild-type mouse lymph node tissue lysate (male case2) at 20 µg

Lane 7:
Arrb1 knockout mouse lymph node tissue lysate (male case1) at 20 µg

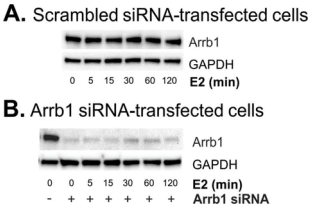
Lane 8:
Arrb1 knockout mouse lymph node tissue lysate (male case2) at 20 µg

Secondary

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

Observed band size: 50 kDa, 36 kDa

Exposure time: 180s



Western blot - Anti-beta Arrestin 1 antibody [E274] (ab32099)

Beta Arrestin 1 Western blot staining using rabbit Anti-beta Arrestin 1 antibody

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beta Arrestin 1 western blot using anti-beta Arrestin 1 antibody [E274] ab32099. Publication image and figure legend from Wong, A. M., Abrams, M. C., et al., 2015, PLoS One, PubMed 25803606.

ab32099 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab32099 please see the product overview.

Estradiol (E2)-induced ERK1/2 phosphorylation in N-38 cells was attenuated in cells transfected with Arrb1 siRNA.(A) Western blots from scrambled siRNA-transfected N-38 cells probed with Arrb1 and GAPDH. (B) Arrb1 western blots from scrambled siRNA-transfected N-38 cells showing knockdown of Arrb1 protein. (C) Representative western blots of levels of ERK1/2 (p44/42 MAPK) phosphorylation in scrambled siRNA-transfected N-38 cells and (D) N-38 cells transfected with Arrb1 siRNA treated with estradiol (E2) for 0–120 min. (E) Densitometric analysis of the optical density from western blots of phosphorylated ERK1/2 (p44/42) protein bands normalized to the optical densities of total ERK1/2 protein in scrambled vs. Arrb1 siRNA-transfected cells. Controls for each group (cells not treated with E2) was set at 100%, and E2 treatments were expressed as a percentage of the control. Values represent means (n = 5) ± SEM. * ($p<0.05$). **($p<0.005$).

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