abcam

ab54790

Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free

KO Validated

Key facts

Isotype	IgG2a
Host species	Mouse
Storage buffer	pH: 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human ARRB2 aa 300 to C-terminus. The exact immunogen used to generate this antibody is proprietary information. Database link P32121
Carrier free	Yes
Clone number	3G1
Purification technique	Affinity purification Protein A
Light chain type	kappa
Concentration	0.48 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	-
Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

Expected

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

Not recommended

Species	Transfected cell lysate - Human
Dilution info	-
Notes	-

WB

Tested

Species	Transfected cell lysate - Human
Dilution info	1 µg/mL
Notes	-

Species	Human
Dilution info	1 µg/mL
Notes	-

Species	Mouse
Dilution info	1 µg/mL
Notes	-

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Not recommended

Species	Transfected cell lysate - Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Not recommended

Species	Transfected cell lysate - Human
Dilution info	-
Notes	-

Target data

See full target information ARRB2

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. Mediates endocytosis of CCR7 following ligation of CCL19 but not CCL21. Involved in internalization of P2RY1, P2RY4, P2RY6 and P2RY11 and ATP-stimulated internalization of P2RY2. Involved in phosphorylation-dependent internalization of OPRD1 and subsequent recycling or degradation. Involved in ubiquitination of IGF1R. 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) and MAPK10 (JNK3). ERK1/2 and JNK3 activated by the beta-arrestin scaffold are largely excluded from the nucleus and confined to cytoplasmic locations such as endocytic vesicles, also called beta-arrestin signalosomes. Acts as a signaling scaffold for the AKT1 pathway. 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). Increases ERK1/2 signaling in AGTR1- and AVPR2-mediated activation (reciprocal regulation). Involved in CCR7-mediated ERK1/2 signaling involving ligand CCL19. Is involved in type-1A angiotensin II receptor/AGTR1-mediated ERK activity. Is involved in type-1A angiotensin II receptor/AGTR1-mediated MAPK10 activity. Is involved in dopamine-stimulated AKT1 activity in the striatum by disrupting the association of AKT1 with its negative regulator PP2A. Involved in AGTR1-mediated chemotaxis. 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. Suppresses UV-induced NF-kappa-B-dependent activation by interacting with CHUK. The function is promoted by stimulation of ADRB2 and dephosphorylation of ARRB2. Involved in p53/TP53-mediated apoptosis by regulating MDM2 and

reducing the MDM2-mediated degradation of p53/TP53. May serve as nuclear messenger for GPCRs. Upon stimulation of OR1D2, may be involved in regulation of gene expression during the early processes of fertilization. Also involved in regulation of receptors other than GPCRs. Involved in endocytosis of TGFBR2 and TGFBR3 and down-regulates TGF-beta signaling such as NF-kappa-B activation. Involved in endocytosis of low-density lipoprotein receptor/LDLR. Involved in endocytosis of smoothened homolog/Smo, which also requires GRK2. Involved in endocytosis of SLC9A5. Involved in endocytosis of ENG and subsequent TGF-beta-mediated ERK activation and migration of epithelial cells. 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 (PubMed:26839314). Involved in insulin resistance by acting as insulin-induced signaling scaffold for SRC, AKT1 and INSR. Involved in regulation of inhibitory signaling of natural killer cells by recruiting PTPN6 and PTPN11 to KIR2DL1. Involved in IL8-mediated granule release in neutrophils. Involved in the internalization of the atypical chemokine receptor ACKR3. Acts as an adapter protein coupling FFAR4 receptor to specific downstream signaling pathways, as well as mediating receptor endocytosis (PubMed:22282525, PubMed:23809162). During the activation step of NLRP3 inflammasome, directly associates with NLRP3 leading to inhibition of pro-inflammatory cytokine release and inhibition of inflammation (PubMed:23809162).

Storage

Shipped at conditions	Blue Ice
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

This product was changed from ascites to tissue culture supernatant on 13th Feb 2019. Please note that the dilutions may need to be adjusted accordingly. If you have any questions, please do not hesitate to contact our scientific support team.

Supplementary info

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

Activity summary	Beta-arrestin 2 also known as arrb2 or b-arrestin mechanically functions to regulate G protein-coupled receptor (GPCR) signaling. This protein has a molecular mass of approximately 47 kDa and is ubiquitously expressed across various tissues including the brain lungs and heart. Beta-arrestin 2 works by binding to phosphorylated GPCRs facilitating receptor desensitization and endocytosis which stops the receptor's signaling activity and mediates receptor internalization.
Biological function summary	Beta-arrestin 2 plays an important role in mediating signal transduction pathways beyond GPCR desensitization including those involved in cell communication and cellular response regulation. Beta-arrestin 2 interacts with multiple signaling proteins to form complexes that facilitate signaling pathways notably influencing MAPK (Mitogen-Activated Protein Kinase) pathways. It provides a scaffold for downstream signaling molecules affecting cell signaling outcomes.
Pathways	Beta-arrestin 2 significantly participates in two important biological pathways: the MAPK pathway and the Wnt signaling pathway. Through these pathways beta-arrestin 2 interacts with signaling proteins such as ERK1/2 (Extracellular signal-Regulated Kinases) and dishevelled proteins. These interactions highlight beta-arrestin 2's ability to modulate signal strength and duration contributing to diverse cellular responses.
Associated diseases and disorders	Beta-arrestin 2 is implicated in conditions like heart failure and certain cancers. The aberrant regulation of beta-arrestin 2-related pathways can lead to uncontrolled cell proliferation or inadequate heart responses. Additionally beta-arrestin 2 is connected to proteins like GPCR kinases in the context of heart failure and MAPK proteins within oncogenic processes underlining its potential as a therapeutic target.

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

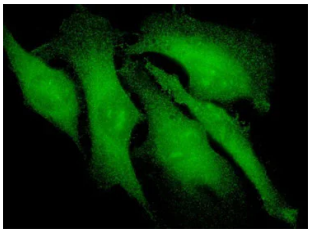
We do not recommend this combination. It is not covered by our product promise.

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.

9 product images

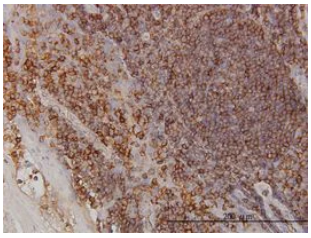


Immunocytochemistry/ Immunofluorescence - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Beta Arrestin 2 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Beta Arrestin 2 antibody

ab54790 at 10 ug/ml staining Beta Arrestin 2 in human Hela cells by Immunocytochemistry / Immunofluorescence.

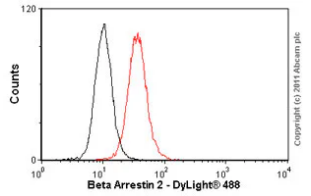
This image was generated using the ascites version of the product.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Beta Arrestin 2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Beta Arrestin 2 antibody

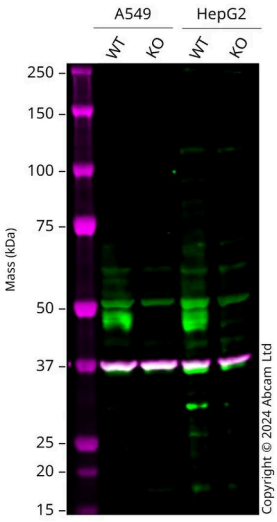
Beta Arrestin 2 antibody (ab54790) used in immunohistochemistry at 3ug/ml on formalin fixed and paraffin embedded human tonsil.
This image was generated using the ascites version of the product.



Flow Cytometry - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Beta Arrestin 2 Flow Cytometry staining using mouse Anti-Beta Arrestin 2 antibody

Overlay histogram showing HeLa cells stained with ab54790 (red line). The cells were fixed with 4% paraformaldehyde (10 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 (ab54790, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was a mix of mouse IgG2a [ICIGG2A], (ab91361, 1µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in HeLa cells fixed with 80% methanol/permeabilized in 0.1% PBS-Tween used under the same conditions.
This image was generated using the ascites version of the product.



Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Beta Arrestin 2 Western blot staining using mouse Anti-Beta Arrestin 2 antibody

Western blot: Anti-ARRB2 antibody [3G1] (ab54790) staining at 1 ug/ml, shown in green; Rabbit Anti-GAPDH antibody [EPR16891] (ab181602) loading control staining at 1/20000 dilution, shown in magenta. In Western blot, ab54790 was shown to bind specifically to ARRB2. A band was observed at 45 kDa in wild-type A549 cell lysates with no signal observed at this size in ARRB2 knockout cell line. To generate this image, wild-type and ARRB2 knockout A549 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in fluorescent western blot (TBS-based) blocking solution before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Mouse IgG H&L 800CW and Goat anti-Rabbit IgG H&L 680RD at 1/20000 dilution.
All lanes:
Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790) at 1 µg/mL

Lane 1:
Wild-type A549 cell lysate at 20 µg

Lane 2:
ARRB2 knockout A549 cell lysate at 20 µg

Lane 2:
Western blot - Human ARRB2 (Beta Arrestin 2) knockout A549 cell line (ab277840)

Lane 3:
Wild-type HepG2 ab262320 cell lysate at 20 µg

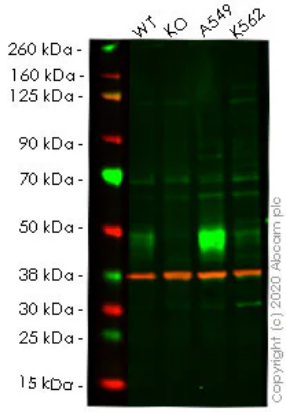
Lane 4:
ARRB2 knockout HepG2 ab262320 cell lysate at 20 µg

Secondary

All lanes:
Goat anti-Mouse IgG H&L 800CW and Goat anti-Rabbit IgG H&L 680RD at 1/20000 dilution

Performed under reducing conditions.

Observed band size: 45 kDa



Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Beta Arrestin 2 Western blot staining using mouse Anti-Beta Arrestin 2 antibody

Lanes 1- 4: Merged signal (red and green). Green - ab54790 observed at 55 kDa. Red - Anti-GAPDH antibody[EPR16891] - Loading Control (ab181602) observed at 37 kDa.
ab54790 was shown to react with ARRB2 in wild-type HepG2 cells in western blot. Loss of signal was observed when knockout cell line ab262320 (knockout cell lysate ab257283) was used. Wild-type HepG2 and ARRB2 knockout HepG2 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. ab54790 and Anti-GAPDH antibody[EPR16891] - Loading Control (ab181602) overnight at 4°C at a 1 in 500 dilution and a 1 in 20000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye®800CW) preadsorbed (ab216772) and Goat Anti-Rabbit IgG H&L (IRDye®680RD) preadsorbed (ab216777) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790) at 1/500 dilution

Lane 1:
Wild-type HepG2 cell lysate at 20 µg

Lane 2:
ARRB2 knockout HepG2 cell lysate at 20 µg

Lane 2:
Western blot - Human ARRB2 (Beta Arrestin 2) knockout Hep G2 cell line (ab262320)

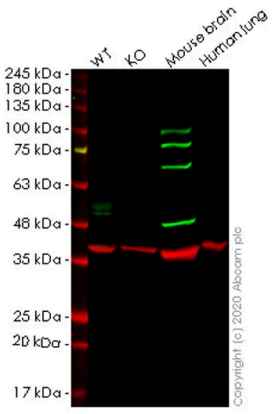
Lane 3:
A549 cell lysate at 20 µg

Lane 4:
K562 cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 46 kDa

Observed band size: 55 kDa



Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Beta Arrestin 2 Western blot staining using mouse Anti-Beta Arrestin 2 antibody

Lanes 1-4: Merged signal (red and green). Green - ab54790 observed at 48-55 kDa. Red - loading control, ab181602 observed at 37 kDa.
ab54790 Anti-Beta Arrestin 2 antibody was shown to specifically react with Beta Arrestin 2 in wild-type HEK293T cells. Loss of signal was observed when knockout cell line ab266116 (knockout cell lysate ab257282) was used. Wild-type and Beta Arrestin 2 knockout samples were subjected to SDS-PAGE. ab54790 and Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602) were incubated overnight at 4°C at 1 in 500 dilution and 1 in 20000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preadsorbed (ab216772) and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preadsorbed (ab216777) secondary antibodies at 1 in 10000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790) at 1/500 dilution

Lane 1:
Wild-type HEK293T cell lysate at 20 µg

Lane 2:
ARRB2 knockout HEK293T cell lysate at 20 µg

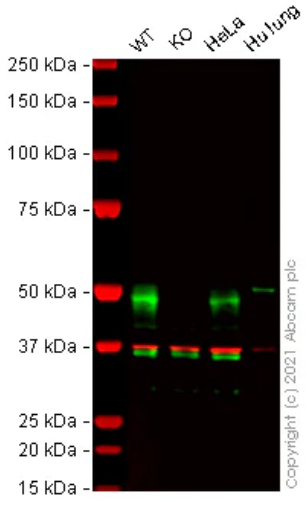
Lane 3:
Mouse brain tissue lysate at 20 µg

Lane 4:
Human lung tissue lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 46 kDa

Observed band size: 48-55 kDa



Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Beta Arrestin 2 Western blot staining using mouse Anti-Beta Arrestin 2 antibody

Lanes 1 - 4: Merged signal (red and green). Green - ab54790 observed at 50 kDa. Red - loading control ab181602 (Rabbit Anti-GAPDH antibody [EPR16891]) observed at 37 kDa.
ab54790 was shown to react with Beta Arrestin 2 in wild-type HepG2 cells in Western blot with loss of signal observed in ARRB2 knockout cell line ab262320 (knockout cell lysate ab257283). Wild-type HepG2 and ARRB2 knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in fluorescent western blot (TBS-based) blocking solution before incubation with ab54790 and ab181602 (Rabbit Anti-GAPDH antibody [EPR16891]) overnight at 4 °C at 1 µg/ml and a 1 in 20000 dilution respectively. Blots were incubated with Goat anti-Mouse IgG H&L (IRDye® 800CW) preabsorbed (ab216772) and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preabsorbed (ab216777) secondary antibodies at 1 in 20000 dilution for 1 h at room temperature before imaging.

All lanes:
Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790) at 1 µg/mL

Lane 1:
Wild-type HepG2 cell lysate at 20 µg

Lane 2:
ARRB2 knockout HepG2 cell lysate at 20 µg

Lane 2:
Western blot - Human ARRB2 (Beta Arrestin 2) knockout Hep G2 cell line (ab262320)

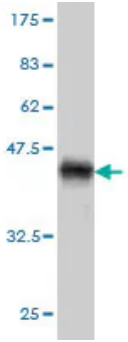
Lane 3:
HeLa cell lysate at 20 µg

Lane 4:
Human Lung tissue lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 46 kDa

Observed band size: 50 kDa



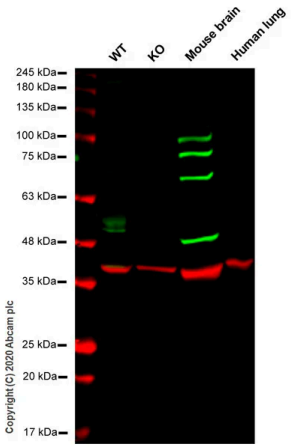
Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Beta Arrestin 2 Western blot staining using mouse Anti-Beta Arrestin 2 antibody

Western blot against tagged recombinant protein immunogen using ab54790 Beta Arrestin 2 antibody at 1ug/ml. Predicted band size of immunogen is 35 kDa
This image was generated using the ascites version of the product.

All lanes:
Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Predicted band size: 46 kDa



Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790)

Beta Arrestin 2 Western blot staining using mouse Anti-Beta Arrestin 2 antibody

Lanes 1-4: Merged signal (red and green). Green - ab54790 observed at 48-55 kDa. Red - loading control, ab181602 observed at 37 kDa.
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All lanes:
Western blot - Anti-Beta Arrestin 2 antibody [3G1] - BSA and Azide free (ab54790) at 1/500 dilution

Lane 1:
Wild-type HEK293T cell lysate at 20 µg

Lane 2:
ARRB2 knockout HEK293T cell lysate at 20 µg

Lane 3:
Mouse brain tissue lysate at 20 µg

Lane 4:
Human lung tissue lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 46 kDa

Observed band size: 55 kDa

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