abcam

ab31294

Anti-Beta Arrestin 2 antibody

Key facts

Isotype	IgG
Host species	Goat
Storage buffer	pH: 7.3 Preservative: 0.02% Sodium azide Constituents: Tris buffered saline, 0.5% BSA
Form	Liquid
Clonality	Polyclonal
Immunogen	Synthetic Peptide within Human ARRB2 aa 350 to C-terminus. The exact immunogen used to generate this antibody is proprietary information. Database link P32121
Purification technique	Affinity purification Immunogen
Specificity	This antibody is expected to recognise both reported isoforms (NP_004304 and NP_945355). No cross reactivity is expected with Arrestin beta 1.
Concentration	0.5 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	This antibody was purified from goat serum by ammonium sulphate precipitation followed by antigen affinity chromatography using the immunizing peptide.

Reactivity data

ICC

Tested

Species	Human
Dilution info	-

Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	0.5-1 µg/mL
Notes	A 1 hour primary incubation is recommended for this product.

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 conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

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.

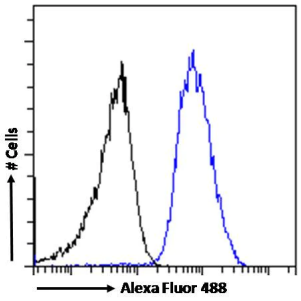
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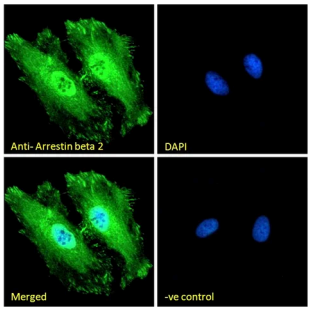
2 product images



Flow Cytometry - Anti-Beta Arrestin 2 antibody (ab31294)

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

Flow cytometric analysis of paraformaldehyde-fixed 0.5% Triton-permeabilized A549 cells (human lung carcinoma cell line) staining beta arrestin positive cells with 10 µg/ml ab31294 and 1 µg/ml Alexa Fluor 488 secondary antibody (blue) and negative control unimmunized goat IgG (black).



Immunocytochemistry - Anti-Beta Arrestin 2 antibody (ab31294)

Beta Arrestin 2 Immunocytochemistry staining using goat Anti-Beta Arrestin 2 antibody

Immunocytochemistry immunofluorescence analysis of paraformaldehyde-fixed 0.15% Triton-permeabilized HeLa cells staining beta arrestin 2 with 10 µg/ml ab31294 and Alexa Fluor 488 secondary antibody 20 µg/ml; plasma membrane and cytoplasmic staining is in green, and the nucleus is counterstained with DAPI in blue. The negative control is unimmunized goat IgG.

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