



C3aR (74): sc-53785

BACKGROUND

Complement C3 precursor contains complement C3 β chain, complement C3 α chain, C3a anaphylatoxin, complement C3b α chain, complement C3c fragment, complement C3dg fragment, complement C3g fragment, complement C3d fragment and complement C3f fragment. C3a, C4a and C5a are potent anaphylatoxins that are released during complement activation, a system of ligand-surface protein interactions specific to cells of hematopoietic lineage that aids in the elimination of pathogens. C3a and C5a secretion correlates with pathophysiological phenotypes such as asthma and bacterial meningitis. Binding of these proteins to their respective G protein-coupled receptors (C3aR, C5aR), which are present on the surface of myeloid leukocytes, induces proinflammatory events such as cellular degranulation, smooth muscle contraction, arachidonic acid metabolism, cytokine release, leukocyte activation and cellular chemotaxis. C3aR is expressed in brain and activated B lymphocytes, whereas C5aR is prevalent on the surface of hepatocyte, lung, smooth muscle and endothelial cells. Upon activation, C3aR and C5aR are susceptible to rapid GRK-mediated phosphorylation and Clathrin-coated vesicle targeting. C5aR utilizes the Ras-Raf-ERK1/2 cascade and couples to G α /G β proteins.

REFERENCES

1. de Bruijn, M.H., et al. 1985. Human complement component C3: cDNA coding sequence and derived primary structure. *Proc. Natl. Acad. Sci. USA* 82: 708-712.
2. Buhl, A.M., et al. 1995. Mitogen-activated protein kinase activation requires two signal inputs from the human anaphylatoxin C5a receptor. *J. Biol. Chem.* 270: 19828-19832.
3. Stahel, P.F., et al. 1997. TNF α -mediated expression of the receptor for anaphylatoxin C5a on neurons in experimental *Listeria meningoencephalitis*. *J. Immunol.* 159: 861-869.
4. Settmacher, B., et al. 1999. Modulation of C3a activity: internalization of the human C3a receptor and its inhibition by C5a. *J. Immunol.* 162: 7409-7416.
5. Langkabel, P., et al. 1999. Ligand-induced phosphorylation of anaphylatoxin receptors C3aR and C5aR is mediated by G protein-coupled receptor kinases. *Eur. J. Immunol.* 29: 3035-3046.
6. Humbles, A.A., et al. 2000. A role for the C3a anaphylatoxin receptor in the effector phase of asthma. *Nature* 406: 998-1001.

CHROMOSOMAL LOCATION

Genetic locus: C3ar1 (mouse) mapping to 6 F1.

SOURCE

C3aR (74) is a mouse monoclonal antibody raised against C3aR of rat origin.

PRODUCT

Each vial contains 200 μ g IgG γ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

C3aR (74) is available conjugated to either phycoerythrin (sc-53785 PE) or fluorescein (sc-53785 FITC), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM.

APPLICATIONS

C3aR (74) is recommended for detection of C3aR of mouse and rat origin by immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 μ g per 1 x 10⁶ cells).

Suitable for use as control antibody for C3aR siRNA (m): sc-42841, C3aR shRNA Plasmid (m): sc-42841-SH and C3aR shRNA (m) Lentiviral Particles: sc-42841-V.

Molecular Weight of C3aR: 65 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

SELECT PRODUCT CITATIONS

1. Chen, X.H., et al. 2018. Deficiency of complement C3a and C5a receptors prevents angiotensin II-induced hypertension via regulatory T cells. *Circ. Res.* 122: 970-983.
2. Kong, L.R., et al. 2023. Loss of C3a and C5a receptors promotes adipocyte browning and attenuates diet-induced obesity via activating inosine/A2aR pathway. *Cell Rep.* 42: 112078.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.