

Complement C3 Antibody



Orders: 877-616-CELL (2355)
orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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Applications: W	Reactivity: H	Sensitivity: Endogenous	MW (kDa): 187	Source/Isotype: Rabbit	UniProt ID: #P01024	Entrez-Gene Id: 718
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Product Usage Information

Application

Western Blotting

Dilution

1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at -20°C. *Do not aliquot the antibody.*

Specificity/Sensitivity

Complement C3 Antibody recognizes endogenous levels of total C3 protein. The predicted epitope of Complement C3 Antibody is at the C-terminus of the α-subunit of C3 protein.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Val1527 of human C3 protein. Antibodies are purified by peptide affinity chromatography.

Background

Complement is a collection of soluble proteins secreted in the blood and other body fluids (1). As part of the innate immune system, complement proteins are involved in the clearance of pathogens and damaged cells in a process called opsonization, which results in the coating of a pathogen with antibodies and/or complement proteins to facilitate phagocytosis of debris or foreign pathogens. Complements are activated by a cascade of cleavage reactions, triggered initially by pattern recognition receptor-mediated detection of pathogens/debris. The cascade of cleavage-mediated products activates three distinct effector pathways, including inflammation, phagocytosis, and membrane attack, that represent a coordinated defense of the host organism. Several complement proteins are encoded in the mammalian genome, designated by the capital letter "C" followed by a number, in order by their discovery. Many complement cascades converge on C3, encoded by the *C3* gene, by activating C3 convertase. The *C3* gene generates a C3 polypeptide protein, composed of an α-subunit and a β-subunit linked by disulfide bonds. Activation of C3 convertase cleaves the C3 α-subunit to generate C3a, which acts as an anaphylatoxin to mediate the local inflammatory response. In addition to C3a, C3 convertase-mediated cleavage of C3 generates C3b. C3b has multiple functions and is a major effector molecule of the complement system. C3b binds to microbial surfaces to enable phagocytosis by phagocytic cells carrying the C3 receptor. C3b can also be further processed by serum proteases to generate other bioactive fragments. Finally, C3b can form complexes with other complement fragments to initiate cleavage of complement family members like C5, which initiates additional innate immune responses. In addition to the innate immune response, several components of the complement system, including C3, have been implicated in brain development, as well as neurodevelopmental and neurodegenerative diseases. The complement system plays a role in microglia-dependent synapse pruning of excess synapses during development, particularly in the visual system (2). Additionally, complement-mediated synaptic pruning may also contribute to neurodegenerative diseases, such as Alzheimer's disease (3,4).

Background References

1. Ricklin, D. and Lambris, J.D. (2016) *Immunol Rev* 274, 5-8.
2. Stephan, A.H. et al. (2012) *Annu Rev Neurosci* 35, 369-89.
3. Hong, S. et al. (2016) *Science* 352, 712-16.
4. Wu, T. et al. (2019) *Cell Rep* 28, 2111-2123.e6.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting

Cross-Reactivity Key

H: Human

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