

**CF150 Antibody (Center)**  
**Affinity Purified Rabbit Polyclonal Antibody (Pab)**  
**Catalog # AW5397****Specification**

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**CF150 Antibody (Center) - Product Information**

Application	WB, FC,E
Primary Accession	<a href="#">Q8N884</a>
Other Accession	<a href="#">NP_612450.2</a>
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Calculated MW	H=59,50 KDa
Isotype	Rabbit IgG
Antigen Source	HUMAN

**CF150 Antibody (Center) - Additional Information****Gene ID** 115004**Antigen Region**  
266-295**Other Names**

Cyclic GMP-AMP synthase, cGAMP synthase, cGAS, h-cGAS, Mab-21 domain-containing protein 1, MB21D1, C6orf150

**Dilution**

WB~~1:1000

FC~~1:25

**Target/Specificity**

This CF150 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 266-295 amino acids from the Central region of human CF150.

**Format**

Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.

**Storage**

Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

**Precautions**

CF150 Antibody (Center) is for research use only and not for use in diagnostic or therapeutic procedures.

**CF150 Antibody (Center) - Protein Information**

## Function

[>21478870</a>, PubMed:<a href="http://www.uniprot.org/citations/23258413" target="\\_blank">23258413</a>, PubMed:<a href="http://www.uniprot.org/citations/23707061" target="\\_blank">23707061</a>, PubMed:<a href="http://www.uniprot.org/citations/23707065" target="\\_blank">23707065</a>, PubMed:<a href="http://www.uniprot.org/citations/23722159" target="\\_blank">23722159</a>, PubMed:<a href="http://www.uniprot.org/citations/24077100" target="\\_blank">24077100</a>, PubMed:<a href="http://www.uniprot.org/citations/24116191" target="\\_blank">24116191</a>, PubMed:<a href="http://www.uniprot.org/citations/24462292" target="\\_blank">24462292</a>, PubMed:<a href="http://www.uniprot.org/citations/25131990" target="\\_blank">25131990</a>, PubMed:<a href="http://www.uniprot.org/citations/26300263" target="\\_blank">26300263</a>, PubMed:<a href="http://www.uniprot.org/citations/29976794" target="\\_blank">29976794</a>, PubMed:<a href="http://www.uniprot.org/citations/30799039" target="\\_blank">30799039</a>, PubMed:<a href="http://www.uniprot.org/citations/31142647" target="\\_blank">31142647</a>, PubMed:<a href="http://www.uniprot.org/citations/32814054" target="\\_blank">32814054</a>, PubMed:<a href="http://www.uniprot.org/citations/33273464" target="\\_blank">33273464</a>, PubMed:<a href="http://www.uniprot.org/citations/33542149" target="\\_blank">33542149</a>, PubMed:<a href="http://www.uniprot.org/citations/37217469" target="\\_blank">37217469</a>, PubMed:<a href="http://www.uniprot.org/citations/37802025" target="\\_blank">37802025</a>\). Catalysis involves both the formation of a 2',5' phosphodiester linkage at the GpA step and the formation of a 3',5' phosphodiester linkage at the ApG step, producing c\[G\(2',5'\)pA\(3',5'\)p\] \(PubMed:<a href="http://www.uniprot.org/citations/28214358" target="\\_blank">28214358</a>, PubMed:<a href="http://www.uniprot.org/citations/28363908" target="\\_blank">28363908</a>\). Acts as a key DNA sensor: directly binds double-stranded DNA \(dsDNA\), inducing the formation of liquid-like droplets in which CGAS is activated, leading to synthesis of 2',3'-cGAMP, a second messenger that binds to and activates STING1, thereby triggering type-I interferon production \(PubMed:<a href="http://www.uniprot.org/citations/28314590" target="\\_blank">28314590</a>, PubMed:<a href="http://www.uniprot.org/citations/28363908" target="\\_blank">28363908</a>, PubMed:<a href="http://www.uniprot.org/citations/29976794" target="\\_blank">29976794</a>, PubMed:<a href="http://www.uniprot.org/citations/32817552" target="\\_blank">32817552</a>, PubMed:<a href="http://www.uniprot.org/citations/33230297" target="\\_blank">33230297</a>, PubMed:<a href="http://www.uniprot.org/citations/33606975" target="\\_blank">33606975</a>, PubMed:<a href="http://www.uniprot.org/citations/35322803" target="\\_blank">35322803</a>, PubMed:<a href="http://www.uniprot.org/citations/35438208" target="\\_blank">35438208</a>, PubMed:<a href="http://www.uniprot.org/citations/35460603" target="\\_blank">35460603</a>, PubMed:<a href="http://www.uniprot.org/citations/35503863" target="\\_blank">35503863</a>\). Preferentially recognizes and binds curved long dsDNAs of a minimal length of 40 bp \(PubMed:<a href="http://www.uniprot.org/citations/30007416" target="\\_blank">30007416</a>\). Acts as a key foreign DNA sensor, the presence of double-stranded DNA \(dsDNA\) in the cytoplasm being a danger signal that triggers the immune responses \(PubMed:<a href="http://www.uniprot.org/citations/28363908" target="\\_blank">28363908</a>\). Has antiviral activity by sensing the presence of dsDNA from DNA viruses in the cytoplasm \(PubMed:<a href="http://www.uniprot.org/citations/28363908" target="\\_blank">28363908</a>, PubMed:<a href="http://www.uniprot.org/citations/35613581" target="\\_blank">35613581</a>\). Also acts as an innate immune sensor of infection by retroviruses, such as HIV-2, by detecting the presence of reverse-transcribed DNA in the cytosol \(PubMed:<a href="http://www.uniprot.org/citations/23929945" target="\\_blank">23929945</a>, PubMed:<a href="http://www.uniprot.org/citations/24269171" target="\\_blank">24269171</a>, PubMed:<a href="http://www.uniprot.org/citations/30270045" target="\\_blank">30270045</a>, PubMed:<a href="http://www.uniprot.org/citations/32852081" target="\\_blank">32852081</a>\). In contrast, HIV-1 is poorly sensed by CGAS, due to its capsid that cloaks viral DNA from CGAS detection \(PubMed:<a href="http://www.uniprot.org/citations/24269171" target="\\_blank">24269171</a>, PubMed:<a href="http://www.uniprot.org/citations/30270045" target="\\_blank">30270045</a>,](http://www.uniprot.org/citations/21478870)

PubMed:<a href="http://www.uniprot.org/citations/32852081" target="\_blank">32852081</a>). Detection of retroviral reverse-transcribed DNA in the cytosol may be indirect and be mediated via interaction with PQBP1, which directly binds reverse-transcribed retroviral DNA (PubMed:<a href="http://www.uniprot.org/citations/26046437" target="\_blank">26046437</a>). Also detects the presence of DNA from bacteria, such as M.tuberculosis (PubMed:<a href="http://www.uniprot.org/citations/26048138" target="\_blank">26048138</a>). 2',3'-cGAMP can be transferred from producing cells to neighboring cells through gap junctions, leading to promote STING1 activation and convey immune response to connecting cells (PubMed:<a href="http://www.uniprot.org/citations/24077100" target="\_blank">24077100</a>). 2',3'-cGAMP can also be transferred between cells by virtue of packaging within viral particles contributing to IFN- induction in newly infected cells in a cGAS-independent but STING1- dependent manner (PubMed:<a href="http://www.uniprot.org/citations/26229115" target="\_blank">26229115</a>). Also senses the presence of neutrophil extracellular traps (NETs) that are translocated to the cytosol following phagocytosis, leading to synthesis of 2',3'-cGAMP (PubMed:<a href="http://www.uniprot.org/citations/33688080" target="\_blank">33688080</a>). In addition to foreign DNA, can also be activated by endogenous nuclear or mitochondrial DNA (PubMed:<a href="http://www.uniprot.org/citations/28738408" target="\_blank">28738408</a>, PubMed:<a href="http://www.uniprot.org/citations/28759889" target="\_blank">28759889</a>, PubMed:<a href="http://www.uniprot.org/citations/31299200" target="\_blank">31299200</a>, PubMed:<a href="http://www.uniprot.org/citations/33031745" target="\_blank">33031745</a>, PubMed:<a href="http://www.uniprot.org/citations/33230297" target="\_blank">33230297</a>). When self-DNA leaks into the cytosol during cellular stress (such as mitochondrial stress, SARS-CoV-2 infection causing severe COVID-19 disease, DNA damage, mitotic arrest or senescence), or is present in form of cytosolic micronuclei, CGAS is activated leading to a state of sterile inflammation (PubMed:<a href="http://www.uniprot.org/citations/28738408" target="\_blank">28738408</a>, PubMed:<a href="http://www.uniprot.org/citations/28759889" target="\_blank">28759889</a>, PubMed:<a href="http://www.uniprot.org/citations/31299200" target="\_blank">31299200</a>, PubMed:<a href="http://www.uniprot.org/citations/33031745" target="\_blank">33031745</a>, PubMed:<a href="http://www.uniprot.org/citations/33230297" target="\_blank">33230297</a>, PubMed:<a href="http://www.uniprot.org/citations/35045565" target="\_blank">35045565</a>). Acts as a regulator of cellular senescence by binding to cytosolic chromatin fragments that are present in senescent cells, leading to trigger type-I interferon production via STING1 and promote cellular senescence (By similarity). Also involved in the inflammatory response to genome instability and double-stranded DNA breaks: acts by localizing to micronuclei arising from genome instability (PubMed:<a href="http://www.uniprot.org/citations/28738408" target="\_blank">28738408</a>, PubMed:<a href="http://www.uniprot.org/citations/28759889" target="\_blank">28759889</a>). Micronuclei, which are frequently found in cancer cells, consist of chromatin surrounded by their own nuclear membrane: following breakdown of the micronuclear envelope, a process associated with chromothripsis, CGAS binds self-DNA exposed to the cytosol, leading to 2',3'-cGAMP synthesis and subsequent activation of STING1 and type-I interferon production (PubMed:<a href="http://www.uniprot.org/citations/28738408" target="\_blank">28738408</a>, PubMed:<a href="http://www.uniprot.org/citations/28759889" target="\_blank">28759889</a>). Activated in response to prolonged mitotic arrest, promoting mitotic cell death (PubMed:<a href="http://www.uniprot.org/citations/31299200" target="\_blank">31299200</a>). In a healthy cell, CGAS is however kept inactive even in cellular events that directly expose it to self-DNA, such as mitosis, when cGAS associates with chromatin directly after nuclear envelope breakdown or remains in the form of postmitotic persistent nuclear cGAS pools bound to chromatin (PubMed:<a href="http://www.uniprot.org/citations/31299200" target="\_blank">31299200</a>, PubMed:<a href="http://www.uniprot.org/citations/33542149" target="\_blank">33542149</a>). Nuclear CGAS is inactivated by chromatin via direct interaction with nucleosomes, which block CGAS from DNA binding and thus prevent CGAS-induced autoimmunity (PubMed:<a href="http://www.uniprot.org/citations/31299200" target="\_blank">31299200</a>, PubMed:<a href="http://www.uniprot.org/citations/32911482" target="\_blank">32911482</a>, PubMed:<a href="http://www.uniprot.org/citations/32912999" target="\_blank">32912999</a>, PubMed:<a href="http://www.uniprot.org/citations/33051594" target="\_blank">33051594</a>, PubMed:<a href="http://www.uniprot.org/citations/33542149" target="\_blank">33542149</a>). Also acts as

a suppressor of DNA repair in response to DNA damage: inhibits homologous recombination repair by interacting with PARP1, the CGAS-PARP1 interaction leading to impede the formation of the PARP1-TIMELESS complex (PubMed:<a href="http://www.uniprot.org/citations/30356214" target="\_blank">30356214</a>, PubMed:<a href="http://www.uniprot.org/citations/31544964" target="\_blank">31544964</a>). In addition to DNA, also sense translation stress: in response to translation stress, translocates to the cytosol and associates with collided ribosomes, promoting its activation and triggering type-I interferon production (PubMed:<a href="http://www.uniprot.org/citations/34111399" target="\_blank">34111399</a>). In contrast to other mammals, human CGAS displays species-specific mechanisms of DNA recognition and produces less 2',3'-cGAMP, allowing a more fine-tuned response to pathogens (PubMed:<a href="http://www.uniprot.org/citations/30007416" target="\_blank">30007416</a>).

#### Cellular Location

Nucleus. Chromosome. Cell membrane; Peripheral membrane protein. Cytoplasm, cytosol. Note=Mainly localizes in the nucleus, and at low level in the cytosol (PubMed:31544964, PubMed:31808743). On chromosomes, enriched on centromeric satellite and LINE DNA repeat elements (PubMed:30811988). Exported from the nucleus to the cytosol in a XPO1/CRM1 via the nuclear export signal in response to DNA stimulation (PubMed:33406424). Outside the nucleus, localizes at the cell membrane as a peripheral membrane protein in resting conditions: association to the cell membrane is mediated via binding to phosphatidylinositol 4,5-bisphosphate (PtdIns(4,5)P2) (PubMed:30827685). Localization at the cell membrane is required to limit the recognition of self-DNA (PubMed:30827685). Following detection of double-stranded DNA (dsDNA), released from the cell membrane into the cytosol in order to signal (PubMed:30827685). Upon transfection with dsDNA forms punctate structures that co-localize with DNA and Beclin-1 (BECN1) (PubMed:26048138). Phosphorylation at Tyr-215 promotes cytosolic retention (PubMed:30356214). In response to translation stress, translocates to the cytosol and associates with collided ribosomes (PubMed:34111399).

#### Tissue Location

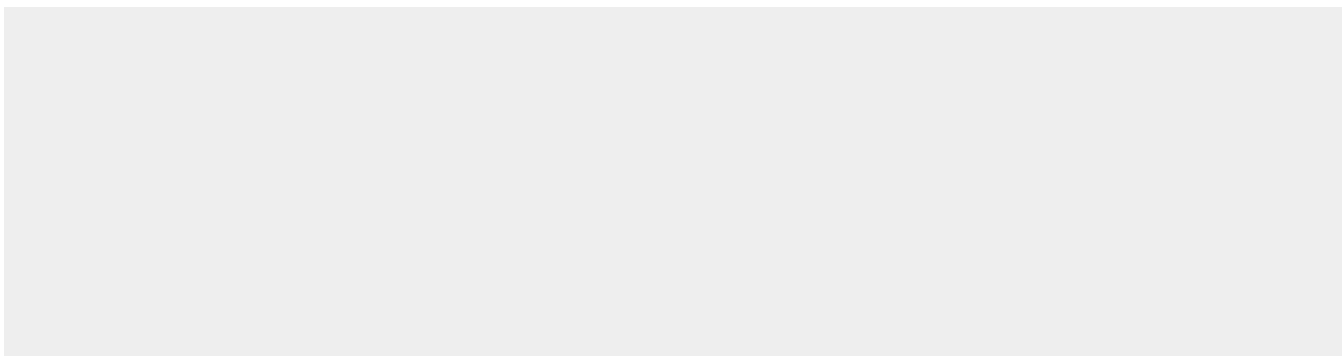
Expressed in the monocytic cell line THP1.

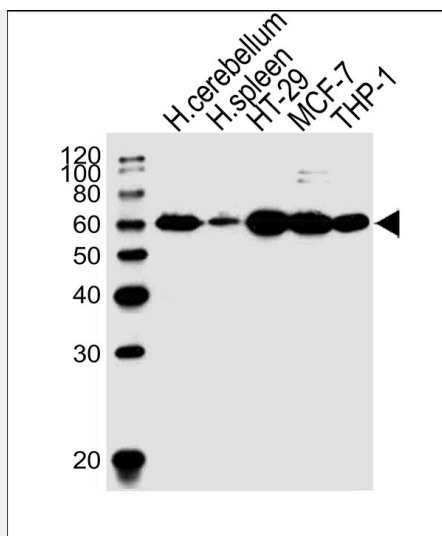
#### CF150 Antibody (Center) - Protocols

Provided below are standard protocols that you may find useful for product applications.

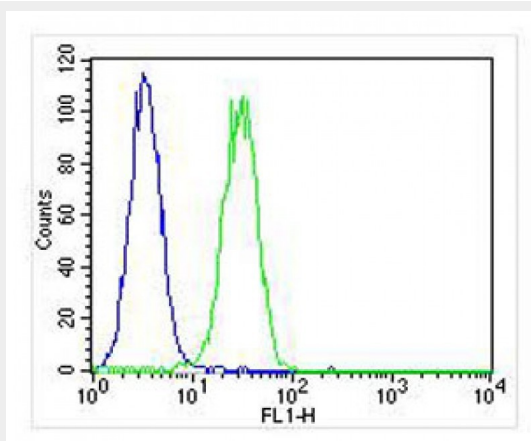
- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

#### CF150 Antibody (Center) - Images





All lanes : Anti-CF150 Antibody (Center) at 1:1000 dilution Lane 1: human cerebellum lysates Lane 2: human spleen lysates Lane 3: HT-29 whole cell lysates Lane 4: MCF-7 whole cell lysates Lane 5: THP-1 whole cell lysates Lysates/proteins at 20  $\mu$ g per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution Predicted band size : 59 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



Overlay histogram showing U-2OS cells stained with AW5397 (green line). The cells were fixed with 2% paraformaldehyde (10 min) and then permeabilized with 90% methanol for 10 min. The cells were then incubated in 2% bovine serum albumin to block non-specific protein-protein interactions followed by the antibody (AW5397, 1:25 dilution) for 60 min at 37°C. The secondary antibody used was Goat-Anti-Rabbit IgG, DyLight® 488 Conjugated Highly Cross-Adsorbed (NA168821) at 1/400 dilution for 40 min at 37°C. Isotype control antibody (blue line) was rabbit IgG (1  $\mu$ g/1x10<sup>6</sup> cells) used under the same conditions. Acquisition of >10,000 events was performed.

#### CF150 Antibody (Center) - Background

The exact function of C6orf150 remains unknown.

#### CF150 Antibody (Center) - References

Rush, J., et al. Nat. Biotechnol. 23(1):94-101(2005)  
Rush, J., et al. Nat. Biotechnol. 23(1):94-101(2005)  
Mungall, A.J., et al. Nature 425(6960):805-811(2003)