PRODUCT INFORMATION

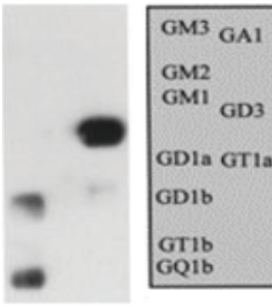
Ganglioside G_{Q1b} Monoclonal Antibody (Clone CGM3)

Item No. 38287

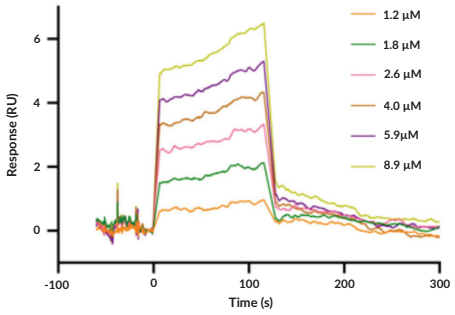
Overview and Properties

Contents: This vial contains 100 µg of mouse IgM in a concentrated hybridoma supernatant.
Synonym: Tetrasialoganglioside G_{Q1b}
Immunogen: *C. jejuni* OH4384/CFA
Cross Reactivity: (+) Ganglioside G_{Q1b}, (+) Some cross reactivity to ganglioside G_{T1a} and ganglioside G_{D3}
(-) Other gangliosides
Species Reactivity: (+) Species independent
Form: Liquid
Storage: -20°C (as supplied)
Stability: ≥1 year
Storage Buffer: Hybridoma supernatant
Clone: CGM3
Host: Mouse
Isotype: IgM
Applications: ELISA, immunofluorescence (IF), and TLC immunostaining; the recommended starting dilutions for ELISA, IF, and TLC are 1:500-1,000, 1:10-1:50, and 1:500, respectively. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

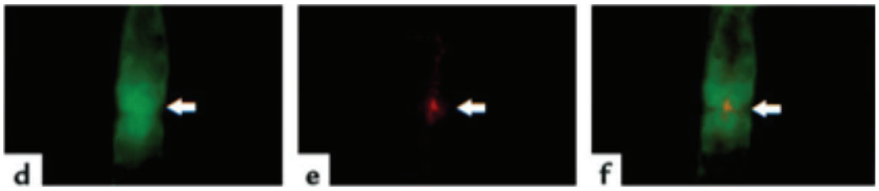
Images



TLC immuno-overlay of CGMG



SPR analysis. Ganglioside G_{Q1b} Monoclonal Antibody (Clone CGM3) was immobilized through a direct capture method to goat anti-mouse IgG + IgM that had been previously amine-fixed to a Series S Sensor Chip CM5. SPR analysis was used to determine Ganglioside G_{Q1b} (Item No. 15589) binding affinity on a Biacore 8K, using multi-cycle kinetics with six concentrations of Ganglioside G_{Q1b}.



Immunofluorescence analysis of sciatic nerve node of Ranvier co-labeled with FITC-labeled cholera toxin B subunit (CTB) (d) and Ganglioside G_{Q1b} Monoclonal Antibody (Clone CGM3). CTB stains the paranodal myelin that lies on either side of the nodal gap (arrow). G_{Q1b} Monoclonal Antibody (Clone CGM3) gives a bright signal directly overlying the nodal axolemma with a weaker ribbon of axonal staining on either side of the node (x790).

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

Ganglioside G_{Q1b} is a sialic acid-containing glycosphingolipid that has been found in myelin of the oculomotor nerves and dorsal root ganglia, as well as neuromuscular spindle fibers.[1,2] It is found on the plasma membrane, where it is anchored by the ceramide moiety with the sialylated oligosaccharide on the extracellular side.[2] In axonal myelin, it helps to stabilize the paranodal region in the node of Ranvier.[1] Ganglioside G_{Q1b} is similar in shape to lipo-oligosaccharides (LOS) on the membrane of certain pathogens, including the bacterium *C. jejuni*. Due to this similarity, autoantibodies against ganglioside G_{Q1b} can be formed during infection with *C. jejuni*. Ganglioside G_{Q1b} monoclonal antibody (CGM3) induces muscle fiber twitching then paralysis in *ex vivo* mouse phrenic nerve hemidiaphragm preparations from mice passively immunized with ganglioside G_{Q1b} monoclonal antibody (CGM3) but only when human serum is present to provide complement and not when applied alone.[2] Autoantibodies against ganglioside G_{Q1b} are found in the cerebrospinal fluid in a majority of patients during the acute phase of Miller-Fisher syndrome, a rare variant of Guillain-Barré syndrome characterized by eye movement abnormalities, impaired coordination, and tendon reflex loss.[1-3] Cayman's Ganglioside G_{Q1b} Monoclonal Antibody (Clone CGM3) binds to Ganglioside G_{Q1b} Mixture (Item No. 15589) with k_a, k_d, and K_D values of 9,200 $M^{-1}s^{-1}$, 0.0752 s^{-1}, and 8.18 µM, respectively, as determined by surface plasmon resonance (SPR). It can be used for ELISA, immunofluorescence (IF), and TLC immunostaining applications.

References

1. Noioso, C.M., Bevilacqua, L., Acerra, G.M., *et al.* Miller Fisher syndrome: An updated narrative review. *Front. Neurol.* **14**, 1250774 (2023).
2. Goodyear, C.S., O'Hanlon, G.M., Plomp, J.J., *et al.* Monoclonal antibodies raised against Guillain-Barré syndrome-associated *Campylobacter jejuni* lipopolysaccharides react with neuronal gangliosides and paralyze muscle-nerve preparations. *J. Clin. Invest.* **104(6)**, 697-708 (1999).
3. Halstead, S.K., Humphreys, P.D., Goodfellow, J.A., *et al.* Complement inhibition abrogates nerve terminal injury in Miller Fisher syndrome. *Ann. Neurol.* **58(2)**, 203-210 (2005).

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