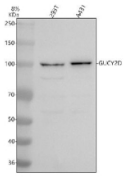
GUCY2D Antibody / Guanylate cyclase 2D (FY12112)

Catalog No.	Formulation	Size
FY12112	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human
Format	Lyophilized
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q02846
Applications	Western Blot : 0.25-0.5ug/ml ELISA : 0.1-0.5ug/ml
Limitations	This GUCY2D antibody is available for research use only.



Western blot analysis of GUCY2D using anti-GUCY2D antibody. Electrophoresis was performed on a 8% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human 293T whole cell lysates, Lane 2: human whole cell lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-GUCY2D antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using an ECL Plus Western Blotting Substrate. A specific band was detected for GUCY2D at approximately 120 kDa. The expected band size for GUCY2D is at 120 kDa.

Description

GUCY2D antibody recognizes Guanylate cyclase 2D, a membrane-bound guanylyl cyclase that plays an essential role in the human visual system. Encoded by the GUCY2D gene located on chromosome 17p13.1, this protein is also referred to as retinal guanylyl cyclase 1 (RetGC-1). It is highly expressed in photoreceptor cells of the retina, where it functions to convert GTP into cyclic GMP (cGMP), a vital second messenger required for the recovery phase of visual

phototransduction. Photoreceptor light responses depend upon tightly regulated cGMP levels, and GUCY2D provides a critical mechanism for replenishing cGMP following photoactivation.GUCY2D contains an extracellular ligand-binding domain, a single-pass transmembrane helix, a kinase homology domain, a dimerization domain, and a catalytic guanylate cyclase domain. This structural complexity enables the protein to respond to calcium-binding proteins called guanylyl cyclase activating proteins (GCAPs), which act as calcium sensors in photoreceptors. Under conditions of reduced intracellular calcium (as occurs during light exposure), GCAPs activate GUCY2D, stimulating cGMP synthesis and restoring dark current. This dynamic regulation ensures normal visual sensitivity and adaptation across light conditions.Pathogenic variants in GUCY2D are a leading cause of inherited retinal diseases. Mutations in this gene are associated with Leber congenital amaurosis type 1 (LCA1), a severe early-onset retinal dystrophy, and with autosomal dominant cone-rod dystrophy type 6 (CORD6). In LCA1, loss-of-function mutations impair cGMP replenishment, resulting in severe visual impairment from infancy. In cone-rod dystrophy, dominant negative mutations disrupt photoreceptor survival and function, leading to progressive central vision loss. These disease associations make GUCY2D antibody an important research tool for both fundamental photoreceptor biology and translational studies aimed at developing gene therapy or pharmacologic interventions.Research applications of this antibody include western blotting, immunohistochemistry, immunofluorescence, and ELISA. In retinal tissue sections, GUCY2D antibodies localize predominantly to the outer segment of rods and cones, where guanylate cyclase activity is required for phototransduction recovery. In disease models, altered expression or mislocalization of GUCY2D provides insights into disease mechanisms. Antibodies against GUCY2D are also used in gene therapy studies, where restoring GUCY2D expression in LCA1 patients has shown promise in preclinical and clinical trials.The importance of GUCY2D research extends beyond the retina, as the protein belongs to the larger family of receptor guanylate cyclases. Comparative studies of GUCY2D with other guanylyl cyclases, such as GC-A and GC-B, enhance understanding of cyclic nucleotide signaling in diverse tissues. The ability to study GUCY2D expression patterns with specific reagents like this antibody, available from NSJ Bioreagents, supports progress in vision research and therapeutic innovation.

Application Notes

Optimal dilution of the GUCY2D antibody should be determined by the researcher.

Immunogen

E.coli-derived human GUCY2D recombinant protein (Position: D65-S1103) was used as the immunogen for the GUCY2D antibody.

Storage

After reconstitution, the GUCY2D antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.