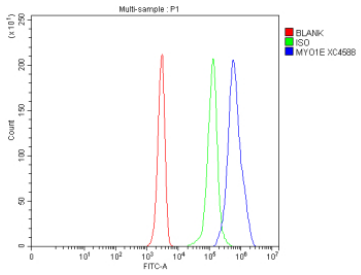
MYO1E Antibody / Myosin IE (FY12114)

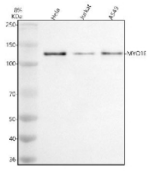
Catalog No.	Formulation	Size
FY12114	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human
Format	Lyophilized
Host	Rabbit
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	Q12965
Applications	Western Blot : 0.25-0.5ug/ml Flow Cytometry : 1-3ug/million cells ELISA : 0.1-0.5ug/ml
Limitations	This MYO1E antibody is available for research use only.



Flow Cytometry analysis of Jurkat cells using anti-MYO1E antibody. Overlay histogram showing Jurkat cells stained with (Blue line). To facilitate intracellular staining, cells were fixed with 4% paraformaldehyde and permeabilized with permeabilization buffer. The cells were blocked with 10% normal goat serum. And then incubated with rabbit anti-MYO1E antibody (1 ug/million cells) for 30 min at 20oC. DyLight 488 conjugated goat anti-rabbit IgG (5-10 ug/million cells) was used as secondary antibody for 30 minutes at 20oC. Isotype control antibody (Green line) was rabbit IgG (1 ug/million cells) used under the same conditions. Unlabelled sample without incubation with primary antibody and secondary antibody (Red line) was used as a blank control.



Western blot analysis of MYO1E using anti-MYO1E antibody. Electrophoresis was performed on a 8% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human Hela whole cell lysates, Lane 2: human Jurkat whole cell lysates, Lane 3: 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-MYO1E 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 MYO1E at approximately 127 kDa. The expected band size for MYO1E is at 127 kDa.

Description

MYO1E antibody recognizes Myosin IE, a unique member of the class I myosins encoded by the MYO1E gene on chromosome 15q22.2. Myosin IE is an unconventional motor protein that binds to actin filaments and associates with cellular membranes, playing a pivotal role in actin-based intracellular transport, endocytosis, and cytoskeletal remodeling. Unlike conventional myosins that form filamentous bipolar structures, MYO1E is a single-headed monomeric myosin that couples ATP hydrolysis with actin-dependent force generation at the plasma membrane. This specialized activity allows MYO1E to influence a variety of membrane trafficking and cytoskeletal processes essential for normal cellular physiology.

The protein structure of MYO1E consists of an N-terminal motor domain, a neck region containing IQ motifs that bind calmodulin, and a C-terminal tail with a pleckstrin homology-like domain and SH3 domain. These domains facilitate interactions with both actin filaments and phospholipids, enabling MYO1E to act as a bridge between cytoskeletal dynamics and membrane signaling. Its ability to interact with accessory proteins such as dynamin, synaptojanin, and endocytic adaptors positions MYO1E as a central regulator of clathrin-mediated endocytosis. Studies have shown that MYO1E is enriched at the leading edge of motile cells and at actin-rich membrane ruffles, underscoring its importance in cell migration and adhesion.

A defining biological role of MYO1E is in the kidney glomerulus, where it is highly expressed in podocytes. Podocytes are specialized epithelial cells that form interdigitated foot processes, which together create the slit diaphragm, a filtration barrier critical for kidney function. MYO1E helps maintain the actin cytoskeleton of podocyte foot processes, preserving barrier integrity against filtration stress. Mutations in the MYO1E gene have been directly linked to autosomal recessive focal segmental glomerulosclerosis (FSGS), a severe renal disease characterized by proteinuria and progressive renal failure. In these cases, MYO1E dysfunction leads to podocyte actin disorganization and foot process effacement, recapitulating the pathology observed in human FSGS patients. Animal models lacking MYO1E similarly display podocyte defects and glomerular scarring, confirming its essential role in renal physiology.

Beyond kidney disease, MYO1E has been implicated in broader cellular functions. Research shows that MYO1E participates in receptor-mediated endocytosis, allowing cells to internalize growth factors, signaling receptors, and nutrients. In cancer biology, elevated MYO1E expression has been correlated with enhanced cell migration and invasive potential, suggesting that it may contribute to tumor metastasis. These findings indicate that MYO1E is not only important for kidney homeostasis but also influences pathological processes in multiple organ systems. MYO1E antibody is therefore a highly versatile tool for research in nephrology, oncology, and cell biology.

Experimentally, MYO1E antibodies are employed in a variety of assays including western blotting, immunofluorescence, immunohistochemistry, and co-immunoprecipitation. In kidney tissue, immunostaining with MYO1E antibody highlights its strong localization in podocytes at the glomerular filtration barrier. In cultured cells, the antibody enables visualization of MYO1E at actin-rich regions and clathrin-coated structures, offering insights into cytoskeletal remodeling and endocytosis. For biochemical studies, MYO1E antibody can immunoprecipitate the protein and its interacting partners, further clarifying its roles in actin-membrane crosstalk.

MYO1E belongs to the expansive myosin superfamily, which is divided into multiple classes based on sequence homology and structural features. While conventional myosins such as myosin II power contractility and muscle function, class I myosins like MYO1E specialize in membrane dynamics. Comparative studies of MYO1E with related myosins, including MYO1C and MYO1F, provide important insights into how individual class I myosins diversify their functions across different cellular contexts. The study of MYO1E is particularly relevant for understanding specialized actin-membrane interfaces that underlie podocyte physiology, neuronal synapses, and cancer cell migration.

Therapeutically, MYO1E continues to attract attention due to its direct link with glomerular disease. The identification of pathogenic MYO1E variants in hereditary nephrotic syndrome has driven interest in targeted therapies that stabilize podocyte actin cytoskeletons. Furthermore, as MYO1E influences migration and adhesion, it represents a potential biomarker and therapeutic target in oncology. NSJ Bioreagents provides MYO1E antibody to support these growing areas of investigation, ensuring that researchers have high-quality reagents to study this multifunctional motor protein in health and disease.

Application Notes

Optimal dilution of the MYO1E antibody should be determined by the researcher.

Immunogen

E.coli-derived human MYO1E recombinant protein (Position: A221-Q1065) was used as the immunogen for the MYO1E antibody.

Storage

After reconstitution, the MYO1E antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.