CELL CULTURE COMPANY

4000 Lexington Ave N, Suite 100, Shoreview, MN 55126

PRODUCT INFORMATION

Rho 1D4 Monoclonal Antibody

Research-grade mAb for the detection and purification of rhodopsin and 1D4 epitope-tagged proteins

Overview

The Rho 1D4 monoclonal antibody was developed by Dr. Robert Molday at the University of British Columbia. Originally developed to recognize rhodopsin, the antibody specifically binds the nine-amino-acid C-terminal epitope TETSQVAPA and has been widely used in research involving rhodopsin and recombinant proteins containing the 1D4 epitope tag. The 1D4 epitope can be incorporated at the C- or N-terminus of recombinant proteins, although antibody binding to the C-terminal epitope is approximately ten times stronger than binding to the N-terminal epitope. Binding is calcium-independent.

Applications

The Rho 1D4 antibody has been used for a variety of research applications, including:

- **Western blotting:** Detection of rhodopsin and 1D4 epitope-tagged proteins.
- **Immunofluorescence and immunocytochemistry:** Detection and localization of target proteins using conventional and confocal microscopy.
- **Immunogold labeling:** Detection of proteins by electron microscopy.
- **Immunoprecipitation and co-immunoprecipitation:** Isolation of tagged proteins and investigation of protein-protein interactions.
- **Affinity purification:** Purification of recombinant proteins containing the 1D4 epitope tag.

The 1D4 epitope has been incorporated into recombinant proteins expressed in a variety of mammalian and yeast systems, including HEK 293, COS-1, and COS-9 cells. Expression vectors used include pcDNA3.1 and pCEP4.

For affinity purification, the antibody can be covalently coupled to affinity matrices using cyanogen bromide or other conventional immobilization linkers. Bound 1D4-tagged proteins can be selectively eluted using an excess of the corresponding epitope peptide under mild conditions.

Product Characteristics

Characteristic	Description
Antibody	Rho 1D4
Type	Monoclonal antibody
Target	Rhodopsin / 1D4 epitope-tagged proteins
Recognized epitope	TETSQVAPA (C-terminal)
Product form	Purified antibody
Supplied concentration	3–8 mg/mL
Supplied formulation	Phosphate buffer / phosphate-buffered saline
Intended use	Research use only

Storage and Handling

- **Short-term storage:** Refrigerate at 2–8 °C.
- **Long-term storage:** Aliquot and store at −80 °C with 10% glycerol.
- **Freeze-thaw:** Avoid repeated freeze-thaw cycles. Prepare aliquots suitable for single use.
- **Visual inspection:** Visible precipitation may indicate deterioration of the antibody.

Selected Publications

1. Molday, R.S. and MacKenzie, D. (1983). Monoclonal antibodies to rhodopsin: characterization, cross-reactivity, and application as structural probes. *Biochemistry*, 22(3), 653–660.
2. Oprian, D., Molday, R.S., Kaufman, R.J., and Khorana, H.G. (1987). Expression of a synthetic bovine rhodopsin gene in monkey kidney cells. *Proceedings of the National Academy of Sciences USA*, 84(24), 8874–8878.
3. Hodges, R.S., Heaton, R.J., Parker, J.M.R., Molday, L., and Molday, R.S. (1988). Antigen-antibody interaction: Synthetic peptides define linear antigenic determinants recognized by monoclonal antibodies directed to the cytoplasmic carboxyl terminus of rhodopsin. *Journal of Biological Chemistry*, 263(24), 11768–11775.
4. Molday, L.L. and Molday, R.S. (2014). 1D4: A Versatile Epitope Tag for the Purification and Characterization of Expressed Membrane and Soluble Proteins. *Methods in Molecular Biology*, 1177, 1–15.