

## Product Information

### Monoclonal Anti-Dynein (Heavy Chain), clone 440.4 produced in mouse, ascites fluid

Catalog Number **D1667**

#### Product Description

Monoclonal Anti-Dynein (Heavy Chain) (mouse IgG2a isotype) is derived from the 440.4 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mice immunized with cytoplasmic dynein purified from chick brain. The isotype is determined by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents, Catalog Number ISO2.

Monoclonal Anti-Dynein (Heavy Chain) identifies the cytoplasmic dynein heavy chain (440 kDa) in immunoblotting with dynein enriched preparations and in crude cell extracts of chicken brain and fibroblasts. Cleavage of the heavy chain into two fragments of approximately 200 kDa by exposure to U.V. light in the presence of ATP and vanadate demonstrated that the antibody reacts exclusively with the lower molecular weight fragment.<sup>1</sup> The product reacts with kinetochores in isolated HeLa chromosomes but not with isolated CHO (Chinese hamster ovary cell line) chromosomal dynein.<sup>1,2</sup> It does not react with *Chlamydomonas flagella* dynein. In intact mitotic chicken embryo fibroblasts, the staining of the spindle with the antibody is clearly visible through diffuse cytoplasmic staining by immunofluorescent techniques.<sup>1</sup> The antibody may also be used in ELISA.

Monoclonal anti-Dynein (Heavy Chain) is a homogenous population of antibody molecules which may be used for the localization of dynein heavy chain using various immunochemical assays such as ELISA, immunoblot, dot blot and immunocytochemistry.

Eukaryotic cells rely on actin and microtubule-based protein motors to generate intracellular movements.<sup>3</sup> These protein "motors" contain specialized domains that hydrolyse ATP to produce force and movement along a cytoskeletal polymer (actin in the case of myosin family and microtubules in the case of the kinesin family and dyneins). The minus-end-directed microtubule motor dynein ATPase is one of the most widely studied microtubule-associated energy transducing enzymes. It constitutes the outer and inner arms on the doublet

tubules of sperm flagellar axonemes, where it generates the sliding between doublets that underlies flagellar beating. Dynein has also been implicated in cytoplasmic motile functions, including chromosomal movement, retrograde organelle and axonal transport, the endocytic pathway, and the organization of the Golgi apparatus. In all cell types, dynein has the same basic structures and is composed of two or three distinct heavy chains (approx. 450 kDa), three intermediate chains (70-125 kDa), and at least four light chains (15-25 kDa).<sup>4</sup>

#### Reagents

Supplied as ascites fluid with 15 mM sodium azide.

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

#### Storage/Stability

Store at 2-8 °C. For extended storage, the solution may be frozen in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

#### Product Profile

**Immunoblotting:** the minimum antibody titer of 1:100 was determined using a chick brain extract or Kinesin enriched rat brain extract.

**Note:** In order to obtain best results in different techniques and preparations, it is recommended that each individual user determine their optimal working dilutions by titration assay.

#### References

1. Steuer, E. R., et al., *Nature*, **345**, 266 (1990).
2. Wordeman, L., et al., *J. Cell Biol.*, **114**, 285 (1991).
3. Vallee, R. B., and Shpetner, H.S., *Rev. Biochem.*, **59**, 909 (1990).
4. Mocz, G., et al., *Biochemistry*, **30**, 7225 (1991).

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