

## Product Information

### Monoclonal Anti-Importin $\beta$

Clone 31H4

Purified Mouse Immunoglobulin

Product Number **I2534**

#### Product Description

Monoclonal Anti-Importin  $\beta$  (mouse IgG1 isotype) is derived from the 31H4 hybridoma produced by the fusion of mouse myeloma cells (NS1 cells) and splenocytes from BALB/c mice immunized with importin  $\beta$ . The isotype is determined using Sigma ImmunoType<sup>™</sup> Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2).

Monoclonal Anti-Importin  $\beta$  recognizes human,<sup>1</sup> bovine, rat, and mouse importin  $\beta$ . The antibody may be used in ELISA, immunoblotting<sup>1</sup> (~97 kDa), and immunocytochemistry.<sup>1</sup>

Importin  $\beta$  (karyopherin  $\beta$ 1, p97), an import receptor, is a member of the nuclear transport receptor family composed, in humans, of more than 20 proteins with molecular weights of 90-180 kDa. These proteins interact directly with the nuclear pore complex (NPC) and mediate nucleocytoplasmic transport. Importin  $\beta$  imports into the nucleus proteins carrying canonical nuclear localization signals (NLS) as well as UsnRNAs, which it binds via adaptor proteins, importin  $\alpha$  (Imp $\alpha$ ) and snurportin-1, respectively. Importin  $\beta$ 1 also binds directly, without adaptor proteins, ribosomal proteins, Smad proteins, and virus derived proteins, such as HIV Rev and Tat that contain nonclassical NLS.<sup>2-5</sup>

The mechanism of importin  $\beta$  action can be demonstrated by the well-studied import of proteins containing classical NLS. Importin  $\beta$ 1 forms a complex with importin  $\alpha$ , which, in turn, binds the cargo protein via its

NLS. The Imp $\beta$ /Imp $\alpha$ /cargo complex translocates into the nucleus. When the complex reaches the nuclear site of the nuclear pore complex (NPC), Ran-GTP binds the Imp $\beta$  and form a Imp $\beta$ /Ran-GTP complex and releases the Imp  $\alpha$  and the cargo protein. The Imp $\beta$ /Ran-GTP complex is then exported to the cytoplasm, where the complex dissociates upon hydrolysis of GTP to GDP. Importin  $\beta$  is then ready for a new import cycle.<sup>2-5</sup>

#### Reagent

The antibody is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as preservative.

Antibody Concentration: Approx. 2 mg/mL

#### Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

#### Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in frost-free freezers is also not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

#### Product Profile

By immunoblotting, a working antibody concentration of 0.5-1  $\mu$ g/ml is recommended using HeLa total cell extract.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining optimal working dilutions by titration.

#### References

1. Massenot, S., et al., *Mol. Cell. Biol.*, **22**, 6533-6541 (2002).
2. Chi, N.C., et al., *J. Cell Biol.*, **2**, 265-274 (1995).
3. Gorlich, D., and Kutay, U., *Annu. Rev. Cell. Dev. Biol.*, **15**, 607-660 (1999).
4. Conti, E., and Izaurralde, E., *Curr. Opin. Cell Biol.*, **13**, 310-319 (2001).
5. Nakielny, S., and Dreyfuss, G., *Cell*, **99**, 677-690 (1999).

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