

# karyopherin $\alpha$ 1/6 (2D9): sc-101540

## BACKGROUND

Protein transport across the nucleus is a selective, multi-step process involving several cytoplasmic factors that mediate protein passage through the nuclear pore complex (NPC). Cytoplasmic proteins that contain nuclear localization signals (NLSs) must be recognized as import substrates, dock at the nuclear pore complex and translocate across the nuclear envelope in an ATP-dependent fashion. Karyopherin  $\alpha$ 1 and karyopherin  $\alpha$ 6 are widely expressed nuclear import proteins that act as adaptors for karyopherin  $\beta$ 1, specifically binding to and guiding NLS-containing proteins to the NPC. Both karyopherin  $\alpha$ 1 and karyopherin  $\alpha$ 6 contain one IBB domain and ten ARM repeats through which they convey their protein binding and localization function. Together, karyopherin  $\alpha$ 1 and karyopherin  $\alpha$ 6 are responsible for ensuring the nuclear import of NLS-containing substrates.

## REFERENCES

1. Moroianu, J., et al. 1995. Previously identified protein of uncertain function is karyopherin  $\alpha$  and together with karyopherin  $\beta$  docks import substrate at nuclear pore complexes. *Proc. Natl. Acad. Sci. USA* 92: 2008-2011.
2. Moroianu, J., et al. 1995. Protein export from the nucleus requires the GTPase Ran and GTP hydrolysis. *Proc. Natl. Acad. Sci. USA* 92: 4318-4322.
3. Lounsbury, K.M., et al. 1996. Ran binding domains promote the interaction of Ran with p97/ $\beta$ -karyopherin, linking the docking and translocation steps of nuclear import. *J. Biol. Chem.* 271: 2357-2360.
4. Moroianu, J., et al. 1996. The binding site of karyopherin  $\alpha$  for karyopherin  $\beta$  overlaps with a nuclear localization sequence. *Proc. Natl. Acad. Sci. USA* 93: 6572-6576.
5. Moroianu, J., et al. 1996. Nuclear protein import: Ran-GTP dissociates the karyopherin  $\alpha/\beta$  heterodimer by displacing  $\alpha$  from an overlapping binding site on  $\beta$ . *Proc. Natl. Acad. Sci. USA* 93: 7059-7062.

## CHROMOSOMAL LOCATION

Genetic locus: KPNA1 (human) mapping to 3q21.1, KPNA6 (human) mapping to 1p35.1; Kpna1 (mouse) mapping to 16 B3, Kpna6 (mouse) mapping to 4 D2.2.

## SOURCE

karyopherin  $\alpha$ 1/6 (2D9) is a rat monoclonal antibody raised against full-length recombinant karyopherin  $\alpha$ 6 of mouse origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>2a</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

karyopherin  $\alpha$ 1/6 (2D9) is available conjugated to agarose (sc-101540 AC), 500  $\mu$ g/0.25 ml agarose in 1 ml, for IP; to either phycoerythrin (sc-101540 PE), fluorescein (sc-101540 FITC), Alexa Fluor<sup>®</sup> 488 (sc-101540 AF488), Alexa Fluor<sup>®</sup> 546 (sc-101540 AF546), Alexa Fluor<sup>®</sup> 594 (sc-101540 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-101540 AF647), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-101540 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-101540 AF790), 200  $\mu$ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

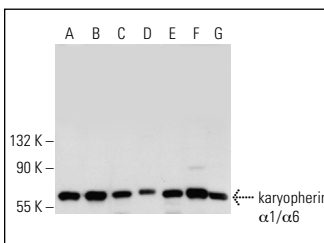
## APPLICATIONS

karyopherin  $\alpha$ 1/6 (2D9) is recommended for detection of karyopherin  $\alpha$ 1 and karyopherin  $\alpha$ 6 of mouse, rat, human, hamster, bovine and monkey origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

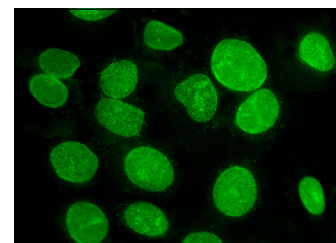
Molecular Weight of karyopherin  $\alpha$ 1/6: 60 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, Jurkat whole cell lysate: sc-2204 or HuT 78 whole cell lysate: sc-2208.

## DATA



karyopherin  $\alpha$ 1/ $\alpha$ 6 (2D9): sc-101540. Western blot analysis of karyopherin  $\alpha$ 1/ $\alpha$ 6 expression in HeLa (A), K-562 (B), Hep G2 (C), Caki-1 (D), ES-2 (E), HuT 78 (F) and Jurkat (G) whole cell lysates.



karyopherin  $\alpha$ 1/6: sc-101540. Immunofluorescence staining of formalin-fixed Hep G2 cells showing nuclear localization.

## SELECT PRODUCT CITATIONS

1. de Santi, F., et al. 2018. Reduced levels of stromal sex hormone-binding globulin and androgen receptor dysfunction in the sperm storage region of the rat epididymis. *Reproduction* 155: 467-479.
2. Storti, B., et al. 2019. Fluorescence imaging of biochemical relationship between ubiquitinated histone 2A and Polycomb complex protein BMI1. *Biophys. Chem.* 253: 106225.
3. Pulupa, J., et al. 2020. Conformation of the nuclear pore in living cells is modulated by transport state. *Elife* 9: e60654.

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

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