Datasheet: PAN017

Description:	RABBIT ANTI 14-3-3 ISOFORM PANEL
Name:	14-3-3 ISOFORM PANEL
Format:	Serum
Product Type:	Kits
Isotype:	Polyclonal IgG
Quantity:	25 µl x 7

Product Details

Applications

This product has been reported to work in the following applications. This information is derived from testing within our laboratories, peer-reviewed publications or personal communications from the originators. Please refer to references indicated for further information. For general protocol recommendations, please visit www.bio-rad-antibodies.com/protocols.

	Yes	No	Not Determined	Suggested Dilution
Flow Cytometry			▪	
Immunohistology - Frozen			▪	
Immunohistology - Paraffin (1)	▪			
ELISA (2)	▪			
Immunoprecipitation			▪	
Western Blotting (3)	▪			

Where this product has not been tested for use in a particular technique this does not necessarily exclude its use in such procedures. Suggested working dilutions are given as a guide only. It is recommended that the user titrates the product for use in their own system using appropriate negative/positive controls.

(1) **All isoforms except sigma**

(2) **All isoforms except eta and sigma**

(3) **All isoforms**

Target Species	Sheep
Product Form	Serum - liquid
Antiserum Preparation	Antisera to the relevant sheep 14-3-3 isoform were raised by repeated immunisations of rabbits with highly purified antigen.
Preservative Stabilisers	0.09% Sodium Azide (NaN_3)
Immunogen	Synthetic peptides corresponding to acetylated N-terminal sequences of sheep 14-3-3

beta, epsilon, eta, gamma, sigma, tau/theta, zeta accordingly.

Product Information

Rabbit anti 14-3-3 Isoform antibody Panel provides the user with a sample panel of the 7 mammalian isoforms of 14-3-3 protein, each component part recognising the acetylated N-terminal region of the relevant isoform. Note: may not react with recombinant proteins that are not N-acetylated.

14-3-3 is a member of the 14-3-3 family, consisting of acidic 30 kDa proteins involved in multiple protein kinase signalling pathways, regulation of cell cycle progression, cytoskeletal structure, transcription, intracellular trafficking and targeting. Protein interactions with 14-3-3, show distinct preferences for the different isoforms, and are regulated by phosphorylation of both 14-3-3 and the bound protein.

Reagents In The Kit

PAN017 is made up of 25ul of each of the following component parts, some of which are also available individually in 0.1ml size.

1. 14-3-3 beta (AHP1044) - plays a role in the pathogenesis of systemic lupus erythematosus and is involved in negative regulation of p90 ribosomal S6 kinase activity and tuberous sclerosis tumour suppressor proteins. Binds IGF-1 receptor, RAF1 and CDC25 phosphatases.

Cross-reactivity: Human, Rat, Mouse, Rabbit, Bovine N.B. Antibody reactivity and working conditions may vary between species.

Immunohistology: requires antigen retrieval using heat treatment prior to staining of paraffin sections. Normal brain tissue may be used as a positive control.

2. 14-3-3 epsilon is expressed in all mammals and is a potential suicide susceptibility gene. It is deleted in small cell lung cancers disrupting the G(2) checkpoint. During apoptosis, cleavage by caspase-3 increases the affinity between bad and Bcl-x(L). When bound by ERK, 14-3-3 epsilon is thought to deactivate heat shock factor 1 in cells recovering from heat shock.

Cross-reactivity: Human, Rat, Mouse, Rabbit, Bovine, Chicken N.B. Antibody reactivity and working conditions may vary between species.

Immunohistology: does not require antigen retrieval using heat treatment prior to staining of paraffin sections. Normal brain tissue may be used as a positive control.

3. 14-3-3 eta (AHP1046) is expressed principally in the brain and at low levels in other tissues. It binds alpha-synuclein, forming part of Lewy bodies in Parkinson’s disease and has been linked to early-onset schizophrenia. It binds both gremlin 1, which is overexpressed in human cancers, and the DAL-1/Protein 4.1B tumour suppressor. Furthermore the glucocortcoid receptor is positively regulated by 14-3-3 eta.

Cross-reactivity: Human, Rat, Mouse, Rabbit, Bovine, Chicken N.B. Antibody reactivity and working conditions may vary between species.

Immunohistology: does not require antigen retrieval using heat treatment prior to staining of paraffin sections. Normal brain tissue may be used as a positive control.

4. 14-3-3 gamma is thought to play an important role in muscle, being induced by growth factors in human vascular smooth muscle cells, and being expressed in skeletal and heart muscles. It binds amyloid beta-protein precursor intracellular domain fragment (AICD) and FE65, facilitating FE65-dependent gene transactivation. Binding of 14-3-3 gamma to glial fibrillary acidic protein is important in the regulation of glial filaments. It binds and may regulate CDK11 during the cell cycle and apoptosis. The level of this isoform is lowered in foetal Down's syndrome brains.

Cross-reactivity: Human, Rat, Mouse, Bovine N.B. Antibody reactivity and working conditions may vary between species.

Immunohistology: requires antigen retrieval using heat treatment prior to staining of paraffin sections. Normal brain tissue may be used as a positive control.

5. 14-3-3 sigma (AHP1050) is expressed mostly in epithelial cells and has been associated with cancers including, nasopharyngeal, endometrial adenocarcinoma, prostate, epithelial ovarian, colorectal, adenoid cystic, papillary and breast.

14-3-3 sigma binds c-fos activating the MAPK pathway and regulates mitosis through binding keratin filaments and sequestering cyclin B1 and cdc2. Sequestration of Bax by 14-3-3 sigma inhibits apoptosis whereas sequestration by CARP-1 induces apoptosis. p73-dependent induction of 14-3-3 sigma regulates chemo sensitivity in breast cancers with p53 mutations. Along with RACK1, 14-3-3 sigma targets DeltaNp63alpha for proteasome degradation, in reaction to DNA damage.

Cross-reactivity: Human, Rat, Mouse, Rabbit, Bovine, Chicken N.B. Antibody reactivity and working conditions may vary between species.

6. 14-3-3 tau/theta (AHP1051) is primarily expressed in T-cells and occurs at lower levels in the brain, heart, pancreas placenta and kidneys. It plays a role in cell cycle progression via interaction with p27(Kip1) and, along with COPI, binds the GB1 RSR sequence involved in protein trafficking. 14-3-3 tau/theta forms a complex with Hsp60 and cellular prion protein which may be involved in prion diseases. It binds BCR/Abl, bacterial effector protein Tir, yes-associated protein and the FSH receptor. Elevated levels of 14-3-3 tau/theta are observed in amyotrophic lateral sclerosis.

Cross-reactivity: Human, Rat, Mouse, Rabbit, Bovine, Chicken N.B.

Antibody reactivity and working conditions may vary between species. Immunohistology: does not require antigen retrieval using heat treatment prior to staining of paraffin sections. Normal tonsil tissue may be used as a positive control.

7. 14-3-3 zeta (AHP1052) is an adaptor protein implicated as a regulator of an array of

	signalling pathways. It binds to and modulates the activity of a large number of protein partners, usually by recognition of a phosphoserine or phosphothreonine motif. Cross-reactivity: Human, Rat, Mouse, Bovine, Chicken N.B. Antibody reactivity and working conditions may vary between species. Immunohistology: does not require antigen retrieval using heat treatment prior to staining of paraffin sections. Normal brain tissue may be used as a positive control.
Western Blotting	All PAN017 component parts detect a band of approximately 30kDa in HEK293 cell lysates.
References	1. Martin, H. *et al*. (1993) Antibodies against major brain isoforms of 14-3-3 protein. An antibody specific for the N-acetylated amino-terminus of a protein. FEBS Lett. 331: 296-303. 2. De, S. *et al.* (2012) Expression of 14-3-3 protein isoforms in mouse oocytes, eggs and ovarian follicular development BMC Res Notes. 5: 57. 3. Wachi T *et al.* (2015) Ablation of the 14-3-3gamma Protein Results in Neuronal Migration Delay and Morphological Defects in the Developing Cerebral Cortex. Dev Neurobiol. Aug 22. [Epub ahead of print]
Further Reading	1. Aitken, A. (2006) 14-3-3 proteins: a historic overview. Semin Cancer Biol. 16 (3): 162-72.
Storage	Store at +4°C or at -20°C if preferred. Storage in frost-free freezers is not recommended. This product should be stored undiluted. Avoid repeated freezing and thawing as this may denature the antibody. Should this product contain a precipitate we recommend microcentrifugation before use.
Guarantee	18 months from date of despatch.
Health And Safety Information	Material Safety Datasheet documentation #10081 available at: 10081: https://www.bio-rad-antibodies.com/uploads/MSDS/10081.pdf
Regulatory	For research purposes only

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