abcam

ab201940

Anti-PER3 antibody [4B9D7]

Key facts

Isotype	IgG2b
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human PER3 aa 700 to C-terminus. The exact immunogen used to generate this antibody is proprietary information. Database link P56645
Clone number	4B9D7
Purification technique	Affinity purification Protein G
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from tissue culture supernatant.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1/200 - 1/400

Notes	ab170192 - Mouse monoclonal IgG2b, is suitable for use as an isotype control with this antibody.

WB

Tested

Species	Human
Dilution info	1/500 - 1/2000
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/200 - 1/1000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/200 - 1/1000
Notes	-

Target data

See full target information PER3

Function	Originally described as a core component of the circadian clock. The circadian clock, an internal time-keeping system, regulates various physiological processes through the generation of approximately 24 hour circadian rhythms in gene expression, which are translated into rhythms in metabolism and behavior. It is derived from the Latin roots 'circa' (about) and 'diem' (day) and acts as an important regulator of a wide array of physiological functions including metabolism, sleep, body temperature, blood pressure, endocrine, immune, cardiovascular, and renal function. Consists of two major components: the central clock, residing in the suprachiasmatic nucleus (SCN) of the brain, and the peripheral clocks that are present in nearly every tissue and organ system. Both

the central and peripheral clocks can be reset by environmental cues, also known as Zeitgebers (German for 'timegivers'). The predominant Zeitgeber for the central clock is light, which is sensed by retina and signals directly to the SCN. The central clock entrains the peripheral clocks through neuronal and hormonal signals, body temperature and feeding-related cues, aligning all clocks with the external light/dark cycle. Circadian rhythms allow an organism to achieve temporal homeostasis with its environment at the molecular level by regulating gene expression to create a peak of protein expression once every 24 hours to control when a particular physiological process is most active with respect to the solar day. Transcription and translation of core clock components (CLOCK, NPAS2, BMAL1, BMAL2, PER1, PER2, PER3, CRY1 and CRY2) plays a critical role in rhythm generation, whereas delays imposed by post-translational modifications (PTMs) are important for determining the period (tau) of the rhythms (tau refers to the period of a rhythm and is the length, in time, of one complete cycle). A diurnal rhythm is synchronized with the day/night cycle, while the ultradian and infradian rhythms have a period shorter and longer than 24 hours, respectively. Disruptions in the circadian rhythms contribute to the pathology of cardiovascular diseases, cancer, metabolic syndromes and aging. A transcription/translation feedback loop (TTFL) forms the core of the molecular circadian clock mechanism. Transcription factors, CLOCK or NPAS2 and BMAL1 or BMAL2, form the positive limb of the feedback loop, act in the form of a heterodimer and activate the transcription of core clock genes and clock-controlled genes (involved in key metabolic processes), harboring E-box elements (5'-CACGTG-3') within their promoters. The core clock genes: PER1/2/3 and CRY1/2 which are transcriptional repressors form the negative limb of the feedback loop and interact with the CLOCK|NPAS2-BMAL1|BMAL2 heterodimer inhibiting its activity and thereby negatively regulating their own expression. This heterodimer also activates nuclear receptors NR1D1, NR1D2, RORA, RORB and RORG, which form a second feedback loop and which activate and repress BMAL1 transcription, respectively. Has a redundant role with the other PER proteins PER1 and PER2 and is not essential for the circadian rhythms maintenance. In contrast, plays an important role in sleep-wake timing and sleep homeostasis probably through the transcriptional regulation of sleep homeostasis-related genes, without influencing circadian parameters. Can bind heme.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	The PER3 protein also known as Period circadian protein homolog 3 plays an important role in maintaining the circadian rhythm. It has a molecular weight of approximately 126 kDa. PER3 is ubiquitously expressed with higher expression noted in tissues such as liver brain and heart. In particular its expression in the suprachiasmatic nucleus of the brain highlights its role in circadian regulation.
Biological function summary	PER3 contributes to the regulation of circadian rhythms and is a part of the circadian clock complex. Together with PER1 and PER2 PER3 participates in feedback loops that control transcriptional-translational cycles which impact various bodily functions such as sleep and metabolism. It binds with proteins like CRY1 CRY2 CLOCK and BMAL1 to establish and maintain the body's 24-hour cycle.
Pathways	PER3 integrates into the circadian rhythm signaling pathway. It interacts directly with other proteins like CLOCK and BMAL1 to modulate gene expression influencing sleep patterns hormonal control and metabolic processes. These interactions highlight its essential role in maintaining homeostasis within the circadian clock machinery and its impact on the sleep-wake cycle.
Associated diseases and disorders	PER3's dysfunction associates with sleep disorders and certain mood disorders. Variants in the PER3 gene have shown links to delayed sleep phase disorder and bipolar disorder. Additionally PER3's interaction with other proteins such as PER1 and PER2 plays a significant role in these pathways indicating how disturbances in these interactions can lead to circadian-related pathologies.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

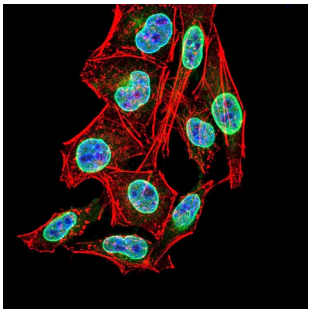
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

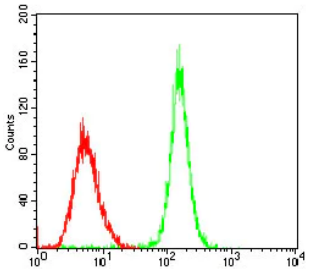
6 product images



Immunocytochemistry/ Immunofluorescence - Anti-PER3 antibody [4B9D7] (ab201940)

PER3 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-PER3 antibody

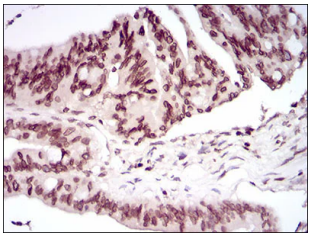
Immunofluorescent analysis of HeLa cells labeling PER3 with ab201940 at 1/200 dilution. Blue: DRAQ5 fluorescent DNA dye. Red: Actin filaments have been labeled with Alexa Fluor- 555 phalloidin.



Flow Cytometry - Anti-PER3 antibody [4B9D7] (ab201940)

PER3 Flow Cytometry staining using mouse Anti-PER3 antibody

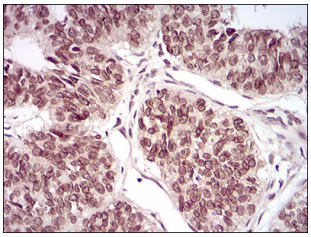
Flow cytometric analysis of HeLa cells labeling PER3 with ab201940 at 1/200 dilution (green) compared to a negative control (red).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PER3 antibody [4B9D7] (ab201940)

PER3 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-PER3 antibody

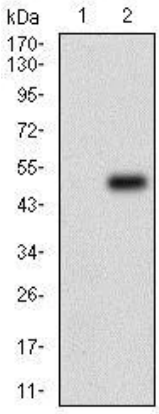
Immunohistochemical analysis of paraffin-embedded Human rectum cancer tissue labeling PER3 with ab201940 at 1/200 dilution, with DAB staining.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PER3 antibody [4B9D7] (ab201940)

PER3 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-PER3 antibody

Immunohistochemical analysis of paraffin-embedded Human ovarian cancer tissue labeling PER3 with ab201940 at 1/200 dilution, with DAB staining.



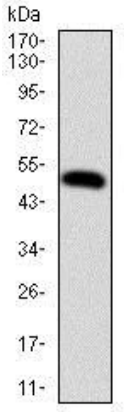
Western blot - Anti-PER3 antibody [4B9D7] (ab201940)

(Expected MW is 50.7 kDa)
All lanes:
Western blot - Anti-PER3 antibody [4B9D7] (ab201940) at 1/500 dilution

Lane 1:
HEK293 cell lysate

Lane 2:
PER3 (aa723-954)-hIgGFc transfected HEK293 cell lysate

Predicted band size: 132 kDa



Western blot - Anti-PER3 antibody [4B9D7] (ab201940)

Expected MWt is 50.7 kDa.
All lanes:
Western blot - Anti-PER3 antibody [4B9D7] (ab201940) at 1/500 dilution

All lanes:
Human PER3 (aa723-954) recombinant protein

Predicted band size: 132 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.