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Cry1 Antibody (C-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP6134a

Product Information

Application	WB, IHC-P, E
Primary Accession	Q16526
Other Accession	Q8WP19
Reactivity	Human
Predicted	Monkey, Mouse, Rat, Bovine, Canine, Rabbit, Chicken
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Clone Names	RB1844
Calculated MW	66395
Antigen Region	556-586

Additional Information

Gene ID	1407
Other Names	Cryptochrome-1, CRY1, PHLL1
Target/Specificity	This Cry1 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 556-586 amino acids from the C-terminal region of human Cry1.
Dilution	WB~~1:1000 IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	Cry1 Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	CRY1
Synonyms	PHLL1
Function	Transcriptional repressor which forms 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 NR1D1/2 and RORA/B/G, which form a second feedback loop and which activate and repress BMAL1 transcription, respectively. CRY1 and CRY2 have redundant functions but also differential and selective contributions at least in defining the pace of the SCN circadian clock and its circadian transcriptional outputs. More potent transcriptional repressor in cerebellum and liver than CRY2, though more effective in lengthening the period of the SCN oscillator. On its side, CRY2 seems to play a critical role in tuning SCN circadian period by opposing the action of CRY1. With CRY2, is dispensable for circadian rhythm generation but necessary for the development of intercellular networks for rhythm synchrony. Capable of translocating circadian clock core proteins such as PER proteins to the nucleus. Interacts with CLOCK-BMAL1 independently of PER proteins and is found at CLOCK-BMAL1-bound sites, suggesting that CRY may act as a molecular gatekeeper to maintain CLOCK-BMAL1 in a poised and repressed state until the proper time for transcriptional activation. Represses the CLOCK-BMAL1 induced transcription of BHLHE40/DEC1. Represses the CLOCK-BMAL1 induced transcription of ATF4, MTA1, KLF10 and NAMPT (By similarity). May repress circadian target genes expression in collaboration with HDAC1 and HDAC2 through histone deacetylation. Mediates the clock-control activation of ATR and modulates ATR-mediated DNA damage checkpoint. In liver, mediates circadian regulation of cAMP signaling and gluconeogenesis by binding to membrane-coupled G proteins and blocking glucagon-mediated increases in intracellular cAMP concentrations and CREB1

	phosphorylation. Inhibits hepatic gluconeogenesis by decreasing nuclear FOXO1 levels that down-regulates gluconeogenic gene expression (By similarity). Besides its role in the maintenance of the circadian clock, is also involved in the regulation of other processes. Represses glucocorticoid receptor NR3C1/GR-induced transcriptional activity by binding to glucocorticoid response elements (GREs). Plays a key role in glucose and lipid metabolism modulation, in part, through the transcriptional regulation of genes involved in these pathways, such as LEP or ACSL4 (By similarity). Represses PPARD and its target genes in the skeletal muscle and limits exercise capacity (By similarity). Plays an essential role in the generation of circadian rhythms in the retina (By similarity). Represses the transcriptional activity of NR1I2 (By similarity).
Cellular Location	Cytoplasm. Nucleus Note=Translocated to the nucleus through interaction with other clock proteins such as PER2 or BMAL1. {ECO:0000250|UniProtKB:P97784}

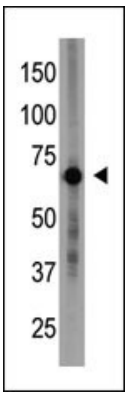
Background

Various biochemical, physiological and behavioural processes display circadian rhythms controlled by an internal biological clock. The central ?gears?driving this clock appear to be composed of an autoregulatory transcription/posttranslation-based feedback loop. Cryptochrome 1 (CRY1) and 2 (CRY2) are DNA-binding flavoproteins that bear some homology to blue-light receptors and photolyases. In Drosophila, CRY is a photoreceptor for the circadian clock where it binds to the clock component TIM in a light-dependent fashion and blocks its function. Mammalian CRY1 and CRY2 function via light-independent interactions with circadian genes CLOCK and BMAL1, as well as with PER1, PER2, and TIM. They seem to act as light-independent components of the circadian clock and likely regulate Per1 transcriptional cycling via interactions with both the activator and its feedback inhibitors. Mutant mice not expressing the Cry1 or Cry2 protein display accelerated and delayed periodicity of locomotor activity, respectively. It appears that the combination of both proteins working together is essential to synchronize the organism to circadian phases. A critical balance between Cry1 and Cry2 is required for proper clock function; in complete darkness, double-mutant mice present with instantaneous arrhythmicity, indicating the absence of an internal circadian clock.

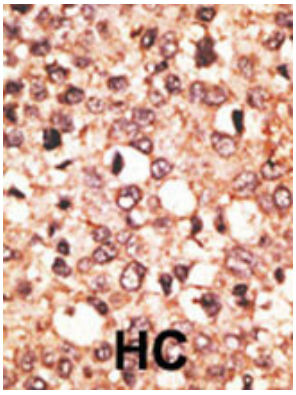
References

Griffin, E.A. Jr., et al., Science 286(5440):768-771 (1999).
van der Horst, G.T., et al., Nature 398(6728):627-630 (1999).
Kobayashi, K., et al., Nucleic Acids Res. 26(22):5086-5092 (1998).
Hsu, D.S., et al., Biochemistry 35(44):13871-13877 (1996).
van der Spek, P.J., et al., Genomics 37(2):177-182 (1996).

Images



The anti-Cry1 N-term Pab (Cat. #AP6134a) is used in Western blot to detect Cry1 in placenta tissue lysate.



Formalin-fixed and paraffin-embedded human cancer tissue reacted with the primary antibody, which was peroxidase-conjugated to the secondary antibody, followed by AEC staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated. BC = breast carcinoma; HC = hepatocarcinoma.

Citations

- Knockout of three aminopeptidase N genes does not affect susceptibility of Helicoverpa armigera larvae to Bacillus thuringiensis Cry1A and Cry2A toxins
- CRISPR/Cas9 mediated genome editing of Helicoverpa armigera with mutations of an ABC transporter gene HaABCA2 confers resistance to Bacillus thuringiensis Cry2A toxins.

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