Datasheet for ABIN3094527

PER2 Protein (AA 1-1255) (His tag)

1 Image

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Overview

Quantity:	1 mg
Target:	PER2
Protein Characteristics:	AA 1-1255
Origin:	Human
Source:	Insect Cells
Protein Type:	Recombinant
Purification tag / Conjugate:	This PER2 protein is labelled with His tag.
Application:	Western Blotting (WB), SDS-PAGE (SDS), ELISA, Crystallization (Crys)

Product Details

Sequence:	MNGYAEFPPS PSNPTKEPVE PQPSQVPLQE DVDMSSGSSG HETNENCSTG RDSQGSDCDD SGKELGMLVE PPDARQSPDT FSLMMAKSEH NPSTSGCSSD QSSKVDTHKE LIKTLKELKV HLPADKKAKG KASTLATLKY ALRSVKQVKA NEEYYQLLMS SEGHPCGADV PSYTVEEMES VTSEHIVKNA DMFAVAVSLV SGKILYISDQ VASIFHCKRD AFSDAKFVEF LAPHDVGVFH SFTSPYKLPL WSMCSGADSF TQECMEEKSF FCRVSVRKSH ENEIRYHPFR MTPYLVKVRD QQGAESQLCC LLLAERVHSG YEAPRIPPEK RIFTTTHTPN CLFQDVDERA VPLLGYLPQD LIETPVLVQL HPSDRPLMLA IHKKILQSGG QPFDYSPIRF RARNGEYITL DTSWSSFINP WSRKISFIIG RHKVRVGPLN EDVFAAHPCT EEKALHPSIQ ELTEQIHRLL LQPVPHSGSS GYGSLGSNGS HEHLMSQTSS SDSNGHEDSR RRRAEICKNG NKTKNRSHYS HESGEQKKKS VTEMQTNPPA EKKAVPAMEK DSLGVSFPEE LACKNQPTCS YQQISCLDSV IRYLESCNEA ATLKRKCEFP ANVPALRSSD KRKATVSPGP HAGEAEPPSR VNSRTGVGTH LTSLALPGKA ESVASLTSQC SYSSTIVHVG DKKPQPELEM VEDAASGPES LDCLAGPALA CGLSQEKEPF

	KKLGLTKEVL AAHTQKEEQS FLQKFKEIRK LSIFQSHCHY YLQERSKGQP SERTAPGLRN TSGIDSPWKK TGKNRKLKSK RVKPRDSSES TGSGGPVSAR PPLVGLNATA WSPSDTSQSS CPAVPFPAPV PAAYSLPVFP APGTVAAPPA PPHASFTVPA VPVDLQHQFA VQPPPFPAPL APVMAFMLPS YSFPSGTPNL PQAFFPSQPQ FPSHPTLTSE MASASQPEFP SRTSIPRQPC ACPATRATPP SAMGRASPPL FQSRSSSPLQ LNLLQLEEAP EGGTGAMGTT GATETAAVGA DCKPGTSRDQ QPKAPLTRDE PSDTQNSDAL STSSGLLNLL LNEDLCSASG SAASESLGSG SLGCDASPSG AGSSDTSHTS KYFGSIDSSE NNHKAKMNTG MEESEHFIKC VLQDPIWLLM ADADSSVMMT YQLPSRNLEA VLKEDREKLK LLQKLQPRFT ESQKQELREV HQWMQTGGLP AAIDVAECVY CENKEKGNIC IPYEEDIPSL GLSEVSDTKE DENGSPLNHR IEEQT **Sequence without tag. Tag location is at the discretion of the manufacturer. If you have a special request, please contact us.**
Characteristics:	• Made in Germany - from design to production - by highly experienced protein experts. • Human PER2 Protein (raised in Insect Cells) purified by multi-step, protein-specific process to ensure crystallization grade. • State-of-the-art algorithm used for plasmid design (Gene synthesis). This protein is a made to order protein and will be made for the first time for your order. Our experts in the lab will ensure that you receive a correctly folded protein. The big advantage of ordering our made-to-order proteins in comparison to ordering custom made proteins from other companies is that there is no financial obligation in case the protein cannot be expressed or purified. In the unlikely event that the protein cannot be expressed or purified we do not charge anything (other companies might charge you for any performed steps in the expression process for custom-made proteins, e.g. fees might apply for the expression plasmid, the first expression experiments or purification optimization). When you order this made-to-order protein you will only pay upon receival of the correctly folded protein. With no financial risk on your end you can rest assured that our experienced protein experts will do everything to make sure that you receive the protein you ordered. The concentration of our recombinant proteins is measured using the absorbance at 280nm. The protein's absorbance will be measured in several dilutions and is measured against its specific reference buffer. The concentration of the protein is calculated using its specific absorption coefficient. We use the Expasy's protparam tool to determine the absorption coefficient of each protein.
Purification:	Two step purification of proteins expressed in baculovirus infected SF9 insect cells: 1. In a first purification step, the protein is purified from the cleared cell lysate using three different His-tag capture materials: high yield, EDTA resistant, or DTT resistant. Eluate

Product Details

	fractions are analyzed by SDS-PAGE. 2. Protein containing fractions of the best purification are subjected to second purification step through size exclusion chromatography. Eluate fractions are analyzed by SDS-PAGE and Western blot.
Purity:	>95 % as determined by SDS PAGE, Size Exclusion Chromatography and Western Blot.
Sterility:	0.22 µm filtered
Endotoxin Level:	Protein is endotoxin free.
Grade:	Crystallography grade

Target Details

Target:	PER2
Alternative Name:	PER2 (PER2 Products)
Background:	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, ARNTL/BMAL1, ARNTL2/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 syndrome and aging. A transcription/translation feedback loop (TTFL) forms the core of the molecular circadian clock mechanism. Transcription factors, CLOCK or NPAS2 and ARNTL/BMAL1 or ARNTL2/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-ARNTL/BMAL1|ARNTL2/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 ARNTL/BMAL1 transcription, respectively. PER1 and PER2 proteins transport CRY1 and CRY2 into the nucleus with appropriate circadian timing, but also contribute directly to repression of clock-controlled target genes through interaction with several classes of RNA-binding proteins, helicases and others transcriptional repressors. PER appears to regulate circadian control of transcription by at least three different modes. First, interacts directly with the CLOCK-ARTNL/BMAL1 at the tail end of the nascent transcript peak to recruit complexes containing the SIN3-HDAC that remodel chromatin to repress transcription. Second, brings H3K9 methyltransferases such as SUV39H1 and SUV39H2 to the E-box elements of the circadian target genes, like PER2 itself or PER1. The recruitment of each repressive modifier to the DNA seems to be very precisely temporally orchestrated by the large PER complex, the deacetylases acting before than the methyltransferases. Additionally, large PER complexes are also recruited to the target genes 3' termination site through interactions with RNA-binding proteins and helicases that may play a role in transcription termination to regulate transcription independently of CLOCK-ARTNL/BMAL1 interactions. Recruitment of large PER complexes to the elongating polymerase at PER and CRY termination sites inhibited SETX action, impeding RNA polymerase II release and thereby repressing transcriptional reinitiation. May propagate clock information to metabolic pathways via the interaction with nuclear receptors. Coactivator of PPARA and corepressor of NR1D1, binds rhythmically at the promoter of nuclear receptors target genes like ARNTL or G6PC. Directly and specifically represses PPARG proadipogenic activity by blocking PPARG recruitment to target promoters and thereby inhibiting transcriptional activation. Required for fatty acid and lipid metabolism, is involved as well in the regulation of circulating insulin levels. Plays an important role in the maintenance of cardiovascular functions through the regulation of NO and vasodilatatory prostaglandins

Target Details

	production in aortas. Controls circadian glutamate uptake in synaptic vesicles through the regulation of VGLUT1 expression. May also be involved in the regulation of inflammatory processes. Represses the CLOCK-ARNTL/BMAL1 induced transcription of BHLHE40/DEC1 and ATF4. Negatively regulates the formation of the TIMELESS-CRY1 complex by competing with TIMELESS for binding to CRY1. {ECO:0000250|UniProtKB:O54943}.
Molecular Weight:	137.5 kDa Including tag.
UniProt:	O15055

Application Details

Application Notes:	In addition to the applications listed above we expect the protein to work for functional studies as well. As the protein has not been tested for functional studies yet we cannot offer a gurantee though.
Comment:	In cases in which it is highly likely that the recombinant protein with the default tag will be insoluble our protein lab may suggest a higher molecular weight tag (e.g. GST-tag) instead to increase solubility. We will discuss all possible options with you in detail to assure that you receive your protein of interest.
Restrictions:	For Research Use only

Handling

Format:	Liquid
Buffer:	100 mM NaCL, 20 mM Hepes, 10% glycerol. pH value is at the discretion of the manufacturer.
Handling Advice:	Avoid repeated freeze-thaw cycles.
Storage:	-80 °C
Storage Comment:	Store at -80°C.
Expiry Date:	Unlimited (if stored properly)

Image 1. „Crystallography Grade“ protein due to multi-step, protein-specific purification process