Datasheet for ABIN3131311

CLOCK Protein (AA 1-855) (Strep Tag)

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Overview

Quantity:	1 mg
Target:	CLOCK
Protein Characteristics:	AA 1-855
Origin:	Mouse
Source:	Tobacco (Nicotiana tabacum)
Protein Type:	Recombinant
Purification tag / Conjugate:	This CLOCK protein is labelled with Strep Tag.
Application:	Western Blotting (WB), SDS-PAGE (SDS), ELISA

Product Details

Sequence:	MVFTVSCSKM SSIVDRDDSS IFDGLVEEDD KDKAKRVSRN KSEKKRRDQF NVLIKELGSM LPGNARKMDK STVLQKSIDF LRKHKETTAQ SDASEIRQDW KPTFLSNEEF TQLMLEALDG FFLAIMTDGS IIYVSESVTS LLEHLPSDLV DQSIFNFIPE GEHSEVYKIL STHLLESDSL TPEYLKSKNQ LEFCCHMLRG TIDPKEPSTY EYVRFIGNFK SLTSVSTSTH NGFEGTIQRT HRPSYEDRVC FVATVRLATP QFIKEMCTVE EPNEEFTSRH SLEWKFLFLD HRAPPIIGYL PFEVLGTSGY DYYHVDDLEN LAKCHEHLMQ YGKGKSCYYR FLTKGQQWIW LQTHYYITYH QWNSRPEFIV CTHTVVSYAE VRAERRRELG IEESLPETAA DKSQDSGSDN RINTVSLKEA LERFDHSPTP SASSRSSRKS SHTAVSDPSS TPTKIPTDTS TPPRQHLPAH EKMTQRRSSF SSQSINSQSV GPSLTQPAMS QAANLPIPQG MSQFQFSAQL GAMQHLKDQL EQRTRMIEAN IHRQQEELRK IQEQLQMVHG QGLQMFLQQS NPGLNFGSVQ LSSGNSNIQQ LTPVNMQGQV VPANQVQSGH ISTGQHMIQQ QTLQSTSTQQ SQQSVMSGHS QQTSLPSQTP STLTAPLYNT MVISQPAAGS MVQIPSSMPQ NSTQSATVTT FTQDRQIRFS QGQQLVTKLV TAPVACGAVM

VPSTMLMGQV VTAYPTFATQ QQQAQTLSVT QQQQQQQQQP PQQQQQQQQS SQEQQLPSVQ QPAQAQLGQP PQQFLQTSRL LHGNPSTQLI LSAAFPLQQS TFPPSHHQQH QPQQQQQLPR HRTDSLTDPS KVQPQ

Sequence without tag. The proposed Strep-Tag is based on experience s with the expression system, a different complexity of the protein could make another tag necessary. In case you have a special request, please contact us.

Characteristics:

Key Benefits:

- Made in Germany - from design to production - by highly experienced protein experts.
- Protein expressed with ALiCE® and purified by multi-step, protein-specific process to ensure correct folding and modification.
- These proteins are normally active (enzymatically functional) as our customers have reported (not tested by us and not guaranteed).
- 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.

Expression System:

- ALiCE®, our Almost Living Cell-Free Expression System is based on a lysate obtained from Nicotiana tabacum c.v.. This contains all the protein expression machinery needed to produce even the most difficult-to-express proteins, including those that require post-translational modifications.
- During lysate production, the cell wall and other cellular components that are not required for protein production are removed, leaving only the protein production machinery and the mitochondria to drive the reaction. During our lysate completion steps, the additional components needed for protein production (amino acids, cofactors, etc.) are added to produce something that functions like a cell, but without the constraints of a living system - all that's needed is the DNA that codes for the desired protein!

Concentration:

- 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.
- We use the Expasy's protparam tool to determine the absorption coefficient of each protein.

Product Details

Purification:	Two step purification of proteins expressed in Almost Living Cell-Free Expression System (ALiCE®): 1. In a first purification step, the protein is purified from the cleared cell lysate using StrepTag capture material. Eluate 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:	≥ 80 % as determined by SDS PAGE, Size Exclusion Chromatography and Western Blot.
Endotoxin Level:	Low Endotoxin less than 1 EU/mg (< 0.1 ng/mg)

Target Details

Target:	CLOCK
Alternative Name:	Clock (CLOCK Products)
Background:	Circadian locomoter output cycles protein kaput (mCLOCK) (EC 2.3.1.48),FUNCTION: Transcriptional activator 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. Regulates the circadian expression of ICAM1, VCAM1, CCL2, THPO and MPL and also acts as an enhancer of the transactivation potential of NF-kappaB. Plays an important role in the homeostatic regulation of sleep. The CLOCK-BMAL1 heterodimer regulates the circadian expression of SERPINE1/PAI1, VWF, B3, CCRN4L/NOC, NAMPT, DBP, MYOD1, PPARGC1A, PPARGC1B, SIRT1, GYS2, F7, NGFR, GNRHR, BHLHE40/DEC1, ATF4, MTA1, KLF10 and also genes implicated in glucose and lipid metabolism. Promotes rhythmic chromatin opening, regulating the DNA accessibility of other transcription factors. May play a role in spermatogenesis, contributes to the chromatoid body assembly and physiology. The CLOCK-BMAL2 heterodimer activates the transcription of SERPINE1/PAI1 and BHLHE40/DEC1. The preferred binding motif for the CLOCK-BMAL1 heterodimer is 5'-CACGTGA-3', which contains a flanking adenine nucleotide at the 3-prime end of the canonical 6-nucleotide E-box sequence (By similarity). CLOCK specifically binds to the half-site 5'-CAC-3', while BMAL1 binds to the half-site 5'-GTGA-3' (By similarity). The CLOCK-BMAL1 heterodimer also recognizes the non-canonical E-box motifs 5'-AACGTGA-3' and 5'-CATGTGA-3'. CLOCK has an intrinsic acetyltransferase activity, which enables circadian chromatin remodeling by acetylating histones and nonhistone proteins, including its own partner BMAL1. Represses glucocorticoid receptor NR3C1/GR-induced transcriptional activity by reducing the association of NR3C1/GR to glucocorticoid response elements (GREs) via the acetylation of multiple lysine residues located in its hinge region. The acetyltransferase activity of CLOCK is as important as its transcription activity in circadian control. Acetylates metabolic enzymes IMPDH2 and NDUFA9 in a circadian manner (By similarity). Facilitated by BMAL1, rhythmically interacts and acetylates argininosuccinate synthase 1 (ASS1) leading to enzymatic inhibition of ASS1 as well as the circadian oscillation of arginine biosynthesis and subsequent ureagenesis

Target Details

	(PubMed:28985504). Drives the circadian rhythm of blood pressure through transcriptional activation of ATP1B1 (PubMed:30012868). {ECO:0000250|UniProtKB:O15516, ECO:0000269|PubMed:12738229, ECO:0000269|PubMed:14672706, ECO:0000269|PubMed:16678094, ECO:0000269|PubMed:17417633, ECO:0000269|PubMed:18075593, ECO:0000269|PubMed:18316400, ECO:0000269|PubMed:19141540, ECO:0000269|PubMed:19286518, ECO:0000269|PubMed:19299583, ECO:0000269|PubMed:19605937, ECO:0000269|PubMed:20385766, ECO:0000269|PubMed:20430893, ECO:0000269|PubMed:20562852, ECO:0000269|PubMed:20658528, ECO:0000269|PubMed:20956306, ECO:0000269|PubMed:21768648, ECO:0000269|PubMed:22284746, ECO:0000269|PubMed:22653727, ECO:0000269|PubMed:22895791, ECO:0000269|PubMed:22900038, ECO:0000269|PubMed:22981862, ECO:0000269|PubMed:23291174, ECO:0000269|PubMed:23785138, ECO:0000269|PubMed:24089055, ECO:0000269|PubMed:24270424, ECO:0000269|PubMed:24333415, ECO:0000269|PubMed:24378737, ECO:0000269|PubMed:24385426, ECO:0000269|PubMed:24395244, ECO:0000269|PubMed:24442997, ECO:0000269|PubMed:28985504, ECO:0000269|PubMed:30012868}.
Molecular Weight:	96.4 kDa
UniProt:	O08785
Pathways:	Regulation of Lipid Metabolism by PPARalpha, Photoperiodism

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 guarantee though.
Comment:	ALiCE®, our Almost Living Cell-Free Expression System is based on a lysate obtained from Nicotiana tabacum c.v.. This contains all the protein expression machinery needed to produce even the most difficult-to-express proteins, including those that require post-translational modifications. During lysate production, the cell wall and other cellular components that are not required for protein production are removed, leaving only the protein production machinery and the mitochondria to drive the reaction. During our lysate completion steps, the additional components needed for protein production (amino acids, cofactors, etc.) are added to produce

Application Details

	something that functions like a cell, but without the constraints of a living system - all that's needed is the DNA that codes for the desired protein!
Restrictions:	For Research Use only

Handling

Format:	Liquid
Buffer:	The buffer composition is at the discretion of the manufacturer. If you have a special request, please contact us.
Handling Advice:	Avoid repeated freeze-thaw cycles.
Storage:	-80 °C
Storage Comment:	Store at -80°C.
Expiry Date:	Unlimited (if stored properly)