Revision 1

#14020 Store at -20C

BMAL1 (D2L7G) Rabbit mAb

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355)
orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB, IP, ChIP	H M R	Endogenous	78	Rabbit IgG	#O00327	406

Product Usage Information

For optimal ChIP results, use 10 µl of antibody and 10 µg of chromatin (approximately 4 x 10^6 cells) per IP. This antibody has been validated using SimpleChIP® Enzymatic Chromatin IP Kits.

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50
Chromatin IP	1:50

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. *Do not aliquot the antibody.*

Specificity / Sensitivity

BMAL1 (D2L7G) Rabbit mAb recognizes endogenous levels of total BMAL1 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Gly552 of human BMAL1 protein.

Background

Circadian rhythms govern many key physiological processes that fluctuate with a period of approximately 24 hours. These processes include the sleep-wake cycle, glucose, lipid and drug metabolism, heart rate, hormone secretion, renal blood flow, and body temperature, as well as basic cellular processes such as DNA repair and the timing of the cell division cycle (1,2). The mammalian circadian system consists of many individual tissue-specific clocks (peripheral clocks) that are controlled by a master circadian pacemaker residing in the suprachiasmatic nuclei (SCN) of the brain (1,2). The periodic circadian rhythm is prominently manifested by the light-dark cycle, which is sensed by the visual system and processed by the SCN. The SCN processes the light-dark information and synchronizes peripheral clocks through neural and humoral output signals (1,2).

The cellular circadian clockwork consists of interwoven positive and negative regulatory loops, or limbs (1,2). The positive limb includes the CLOCK and BMAL1 proteins, two basic helix-loop-helix-PAS containing transcription factors that bind E box enhancer elements and activate transcription of their target genes. CLOCK is a histone acetyltransferase (HAT) protein, which acetylates both histone H3 and H4 (3). BMAL1 binds to CLOCK and enhances its HAT activity (3). The CLOCK/BMAL1 dimer exhibits a periodic oscillation in both nuclear/cytoplasmic localization and protein levels, both of which are regulated by phosphorylation (4,5). CLOCK/BMAL1 target genes include the Cry and Per genes, whose proteins form the negative limb of the circadian clockwork system (1,2). CRY and PER proteins (CRY1, CRY2, PER1, PER2 and PER3) form oligomers that also periodically shuttle between the nucleus and cytoplasm. When in the nucleus, CRY/PER proteins inhibit CLOCK/BMAL1-mediated transcriptional activation, thus completing the circadian transcriptional loop (1,2). In tissues, roughly six to eight percent of all genes exhibit a circadian expression pattern (1,2). This 24-hour periodicity in gene expression results from coordination of the positive and negative regulatory limbs of the cellular clockwork system, and is fine-tuned by outside signals received from the SCN.

Background References

1. Albrecht, U. and Eichele, G. (2003) *Curr Opin Genet Dev* 13, 271-7.
2. Virshup, D.M. et al. (2007) *Cold Spring Harb Symp Quant Biol* 72, 413-20.
3. Doi, M. et al. (2006) *Cell* 125, 497-508.
4. Kondratov, R.V. et al. (2003) *Genes Dev* 17, 1921-32.
5. Kwon, I. et al. (2006) *Mol Cell Biol* 26, 7318-30.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting **IP:** Immunoprecipitation **ChIP:** Chromatin IP

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster **X:** Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse **GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

Trademarks and Patents

Limited Uses