Revision 1

Store at -20C

#37739

N1-Methyladenosine (m1A) (E8S7H) Rabbit mAb

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Applications:	Reactivity:	Sensitivity:	Source/Isotype:
R Dot Blot	All	Endogenous	Rabbit IgG

Product Usage Information

Application	Dilution
RNA Dot Blot	1:1000

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

N1-Methyladenosine (m1A) (E8S7H) Rabbit mAb recognizes endogenous levels of N1-methyladenosine (m1A) protein. This antibody has been validated using ELISA and dot blot assays and shows high specificity for m1A. This antibody does not cross-react with unmodified adenosine, N6-methyladenosine, or 2'-O-methyladenosine.

Source / Purification

Monoclonal antibody is produced by immunizing animals with N1-methyladenosine protein.

Background

N1-methyladenosine (m1A) is a post-transcriptional modification found in various RNA subtypes. Even though m1A was first isolated in the 1960s, lack of tools and reagents have made interrogating the epitranscriptomic landscape challenging (1,2). Most tRNAs are modified at the A58 position, which is conserved across species. Methylation at the N1 position of A58 confers a positive charge at the elbow region of the tRNA tertiary structure and does so without disrupting hydrogen bond interactions, ultimately stabilizing it (3). The enzyme complex responsible for deposition of the m1A mark on tRNA is conserved from yeast to humans. It consists of the enzymatic protein TRM61 and the substrate recognition protein TRM6 (4,5) N1-methyladenosine is also found on rRNA, and is deposited by Rrp8 in yeast and NML in mammals (6,7). The 28S rRNA undergoes methylation at position 645 in Helix 25.1, promoting 60S subunit formation (6). In mRNA, m1A modification is also present, but the relative abundance is still being quantified through various sequencing techniques (8-10). It seems most mRNA m1A sites are catalyzed by TRM6/61 and results in transcriptional repression due to the disruption of base pairing (9).

m1A, much like m6A, can be erased by various enzymes. ALKBH1 has been shown to erase the m1A mark on tRNAs, resulting in reduced translational initiation, which responds to the availability of glucose (11). ALKBH3 has also been shown to erase m1A marks from mRNA transcripts (8).

Background References

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4. Anderson, J. et al. (2000) *Proc Natl Acad Sci U S A* 97, 5173-8.
5. Ozanick, S. et al. (2005) *RNA* 11, 1281-90.
6. Peifer, C. et al. (2013) *Nucleic Acids Res* 41, 1151-63.
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11. Li, X. et al. (2016) *Nat Chem Biol* 12, 311-6.

Species Reactivity

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

Applications Key

R Dot Blot: RNA Dot Blot

Cross-Reactivity Key

All: All Species Expected

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