PRODUCT INFORMATION

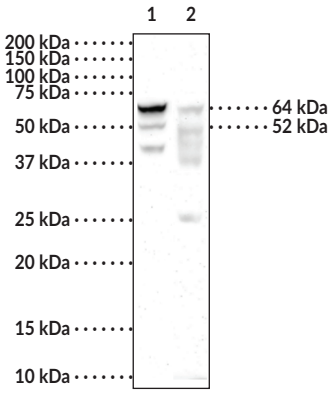
METTL3/14 Complex Monoclonal Antibody (Clone 7A9)

Item No. 29313

Overview and Properties

Contents:	This vial contains 200 µg of protein G-purified monoclonal antibody.
Synonyms:	N^6-Adenosine-Methyltransferase Catalytic Subunit/N^6-Adenosine-Methyltransferase Non-catalytic Subunit, Methyltransferase-like Protein 3/Methyltransferase-like Protein 14, hMETTL3/hMETTL14
Immunogen:	Recombinant human METTL3/14 complex
Species Reactivity:	(+) Human; other species not tested
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥3 years
Storage Buffer:	PBS, pH 7.2, with 50% glycerol and 0.02% sodium azide
Clone:	7A9
Host:	Mouse
Isotype:	IgG1
Applications:	ELISA and Western blot (WB); the recommended starting dilution for ELISA and WB is 1:1,000. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Image



Lane 1: K562 cell lysate (50 µg)
Lane 2: HL-60 cell lysate (50 µg)

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Description

Methyltransferase-like protein 3 (METTL3) and METTL14 are m^{6}A RNA methyltransferases encoded by the *METTL3* and *METTL14* genes, respectively, in humans.[1] METTL3 and METTL14 form a stable complex in the cytoplasm then localize to the nucleus *via* a METTL3 nuclear localization sequence. METTL3 contains an N-terminal leader helix domain that interacts with Wilms' tumor 1-associated protein (WTAP) in the nucleus, which confers localization of the complex to nuclear speckles. METTL14 contains a C-terminal arginine-glycine-glycine (RGG) sequence that contributes to the catalytic activity of the complex. METTL3 and METTL14 each contain methyltransferase domains but the METTL3 domain alone binds S-adenosylmethionine (SAM) or S-adenosylhomocysteine (SAH) while METTL14 interacts with RNA.[2] The METTL3/14 complex primarily binds to regions of RNA that correspond to intergenic and intron regions of DNA, and it preferentially methylates RNA substrates that contain the sequence GGACU, with little preference for secondary structural features of the substrates.[3] METTL3 and METTL14 are involved in hematopoietic stem cell differentiation *in vitro* and are necessary for self-renewal and reconstitution of hematopoietic stem cells following bone marrow transplantation in mice.[4] *Mettl3* knockdown or *Mettl14* knockout increases radial glia cell cycle length in embryonic mouse brain, and *Mettl14* knockout extends cortical neurogenesis into the postnatal period.[5] Knockdown of METTL3 or METTL14 also increases proliferation of glioblastoma stem cells (GSCs) *in vitro* and increases tumor size in a mouse orthotopic model using GSCs.[6] The expression of METTL3 and METTL14 is reduced in juvenile patients with *ETV6/RUNX1(E/R)*-positive acute lymphoblastic leukemia (ALL).[7] Cayman's METTL3/14 Complex Monoclonal Antibody (Clone 7A9) can be used for ELISA and Western blot (WB) applications. The antibody recognizes METTL3 and METTL14 at approximately 64 and 52 kDa, respectively, from human samples.

References

1. Scholler, E., Weichmann, F., Treiber, T., *et al.* Interactions, localization, and phosphorylation of the m^{6}A generating METTL3-METTL14-WTAP complex. *RNA* **24(4)**, 499-512 (2018).
2. Wang, P., Doxtader, K.A., and Nam, Y. Structural basis for cooperative function of Mettl3 and Mettl14 methyltransferases. *Mol. Cell* **63(2)**, 306-317 (2016).
3. Liu, J., Yue, Y., Han, D., *et al.* A METTL3-METTL14 complex mediates mammalian nuclear RNA N^6-adenosine methylation. *Nat. Chem. Biol.* **10(2)**, 93-95 (2014).
4. Yao, Q.J., Sang, L., Lin, M., *et al.* Mettl3-Mettl14 methyltransferase complex regulates the quiescence of adult hematopoietic stem cells. *Cell Res.* **28(9)**, 952-954 (2018).
5. Yoon, K.J., Ringeling, F.R., Vissers, C., *et al.* Temporal control of mammalian cortical neurogenesis by m^{6}A methylation. *Cell* **171(4)**, 877-889 (2017).
6. Cui, Q., Shi, H., Ye, P., *et al.* m^{6}A RNA methylation regulates the self-renewal and tumorigenesis of glioblastoma stem cells. *Cell Rep.* **18(11)**, 2622-2634 (2017).
7. Sun, C., Chang, L., Liu, C., *et al.* The study of *METTL3* and *METTL14* expressions in childhood *ETV6/RUNX1*-positive acute lymphoblastic leukemia. *Mol. Genet. Genomic Med.* **7(10)**, e00933 (2019).

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