

METTL3 Protein, Human, Recombinant (His)

General Information

Synonyms:	MTA70;Methyltransferase-like protein 3 (hMETTL3);METTL3;N(6)-adenosine-methyltransferase catalytic subunit METTL3;N(6)-adenosine-methyltransferase 70 kDa subunit (MT-A70)
Protein Construction:	2-580 aa
Species:	Human
Expression Host:	E. coli
Accession:	Q86U44
Molecular Weight:	70.4 kDa (predicted)
AA Sequence:	<p>SDTWSSIQAHKKQLDSLRLRERLQRRRKQDSGHLDLRNPEAALSPTFRSDSPVPTAPTSGGPKPSTASAVPELAT DPELEKLLHLSLALTLPTDAVSICLAISTPDAPATQDGVESLLQKFAAQELIEVKRGLLQDDAHPTLVYAD HSKLSAMMGAVAEKKGPEVAGTVTGQKRRAEQDSTTVAAFASSLVSLNSSASEPAKEPAKKSRRKHAASD VDLEIESLLNQSTKEQQSKKVSQEILELLNTTTAKEQSIVEKFRSRGRAQVQEFCDYGTKEECMKASDADRPC RKLHFRRIINKHTDESLGDCSFLNTCFHMDTCKYVHYEIDACMDSEAPGSKDHTPSQELALTQSVGGDSSADR LFPPQWICCDIRYLDVSILGKFAVVMADPPWDIHMELPYGTLTDDMRLNIPVLQDDGFLFLWVTGRAMELG RECLNLWGYERVDEIIVVKTNLQRIIRTGRTGHWLNHGKEHCLVGVKGNPQGFNQGLDCDVIVAEVRSTSH KPDEIYGMIERLSPGTRKIELFGRPHNVQPNWITLGNQLDGIHLLDPDVARFKQRYPDGIISKPKNL</p>

QC Testing

Biological Activity:	Activity has not been tested. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 90% as determined by SDS-PAGE.
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	If the delivery form is liquid, the default storage buffer is Tris/PBS-based buffer, 5%-50% glycerol.If the delivery form is lyophilized powder, the buffer before lyophilization is Tris/PBS-based buffer, 6% Trehalose, pH 8.0.

Preparation and Storage

Reconstitution:

Reconstitute the lyophilized protein in sterile deionized water. The product concentration should not be less than 100 μg/mL. Before opening, centrifuge the tube to collect powder at the bottom. After adding the reconstitution buffer, avoid vortexing or pipetting for mixing.

Stability & Storage:

Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months.

Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

The METTL3-METTL14 heterodimer forms a N6-methyltransferase complex that methylates adenosine residues at the N(6) position of some RNAs and regulates various processes such as the circadian clock, differentiation of embryonic and hematopoietic stem cells, cortical neurogenesis, response to DNA damage, differentiation of T-cells and primary miRNA processing. In the heterodimer formed with METTL14, METTL3 constitutes the catalytic core. N6-methyladenosine (m6A), which takes place at the 5'-[AG]GAC-3' consensus sites of some mRNAs, plays a role in mRNA stability, processing, translation efficiency and editing. M6A acts as a key regulator of mRNA stability: methylation is completed upon the release of mRNA into the nucleoplasm and promotes mRNA destabilization and degradation. In embryonic stem cells (ESCs), m6A methylation of mRNAs encoding key naive pluripotency-promoting transcripts results in transcript destabilization, promoting differentiation of ESCs. M6A regulates the length of the circadian clock: acts as an early pace-setter in the circadian loop by putting mRNA production on a fast-track for facilitating nuclear processing, thereby providing an early point of control in setting the dynamics of the feedback loop. M6A also regulates circadian regulation of hepatic lipid metabolism. M6A regulates spermatogonial differentiation and meiosis and is essential for male fertility and spermatogenesis. Also required for oogenesis. Involved in the response to DNA damage: in response to ultraviolet irradiation, METTL3 rapidly catalyzes the formation of m6A on poly(A) transcripts at DNA damage sites, leading to the recruitment of POLK to DNA damage sites. M6A is also required for T-cell homeostasis and differentiation: m6A methylation of transcripts of SOCS family members (SOCS1, SOCS3 and CISH) in naive T-cells promotes mRNA destabilization and degradation, promoting T-cell differentiation. Inhibits the type I interferon response by mediating m6A methylation of IFNB. M6A also takes place in other RNA molecules, such as primary miRNA (pri-miRNAs). Mediates m6A methylation of Xist RNA, thereby participating in random X inactivation: m6A methylation of Xist leads to target YTHDC1 reader on Xist and promote transcription repression activity of Xist. M6A also regulates cortical neurogenesis: m6A methylation of transcripts related to transcription factors, neural stem cells, the cell cycle and neuronal differentiation during brain development promotes their destabilization and decay, promoting differentiation of radial glial cells. METTL3 mediates methylation of pri-miRNAs, marking them for recognition and processing by DGCR8. Acts as a positive regulator of mRNA translation independently of the methyltransferase activity: promotes translation by interacting with the translation initiation machinery in the cytoplasm. Its overexpression in a number of cancer cells suggests that it may participate in cancer cell proliferation by promoting mRNA translation. During human coronavirus SARS-CoV-2 infection, adds m6A modifications in SARS-CoV-2 RNA leading to decreased DDX58/RIG-I binding and subsequently dampening the sensing and activation of innate immune responses.

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Tel:781-999-4286 E_mail:info@targetmol.com Address:34 Washington Street,Wellesley Hills,MA 02481