PRODUCT INFORMATION

Firefly Luciferase mRNA (Cap-1; mo^{5}U)

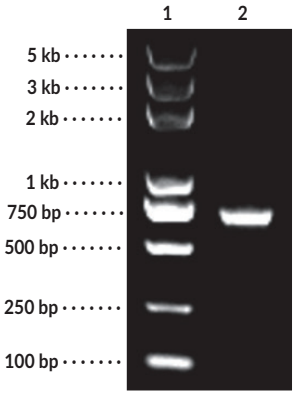
Item No. 39801

Overview and Properties

Synonym:	Firefly Luciferase mRNA (5-moUTP)
Storage:	-80°C (as supplied)
Stability:	≥6 months
Supplied in:	1 mM Sodium citrate, pH 6.4
Concentration:	1 mg/ml
Em. Max	~560 nm

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



Lane 1: MW Markers
Lane 2: mRNA

Analyzed by 1.5% native TAE agarose gel.

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

Firefly Luciferase mRNA (Cap-1; mo5U) encodes for luciferase, a protein originally isolated from the firefly *P. pyralis*, that catalyzes the ATP-dependent oxidation of the molecule luciferin resulting in chemiluminescence at a wavelength of approximately 560 nm.[1,2] It is capped using a co-transcriptional capping method, resulting in the naturally occurring Cap 1 structure with high capping efficiency. Firefly Luciferase mRNA is also polyadenylated and modified with 5-methyoxy-UTP (mo^5U) to reduce the host cell immune response and enhance mRNA stability. Encapsulation of Firefly Luciferase mRNA (Cap-1; mo^5U) in lipid nanoparticles (LNPs) can be used for mRNA delivery and expression of luciferase protein *in vitro* or *in vivo*.[3,4]

References

1. Baldwin, T.O. Firefly luciferase: The structure is known, but the mystery remains. *Structure* **4(3)**, 223-228 (1996).
2. Zhang, G., Gurtu, V., and Kain, S.R. An enhanced green fluorescent protein allows sensitive detection of gene transfer in mammalian cells. *Biochem. Biophys. Res. Commun.* **227(3)**, 707-711 (1996).
3. Zhang, Y., Xi, X., Yu, H., *et al.* Chemically modified *in-vitro*-transcribed mRNA encoding thrombopoietin stimulates thrombopoiesis in mice. *Mol. Ther. Nucleic Acids* **29**, 657-671 (2022)
4. Zhao, P., Tian, Y., Lu, Y., *et al.* Biomimetic calcium carbonate nanoparticles delivered IL-12 mRNA for targeted glioblastoma sono-immunotherapy by ultrasound-induced necroptosis. *J. Nanobiotechnology* **20(1)**, 525 (2022).

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