

# PRODUCT INFORMATION



## Firefly Luciferase mRNA (Cap-1; mo<sup>5</sup>U)

Item No. 39801

### Overview and Properties

**Synonym:** Firefly Luciferase mRNA (5-moUTP)

**Storage:** -80°C (as supplied)

**Stability:** ≥6 months

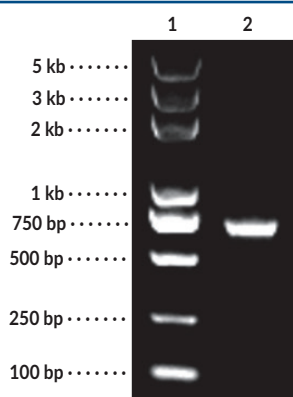
**Supplied in:** 1 mM Sodium citrate, pH 6.4

**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.

**WARNING**  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

**WARRANTY AND LIMITATION OF REMEDY**  
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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### 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; mo<sup>5</sup>U) 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.<sup>1,2</sup> 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-methoxy-UTP (mo<sup>5</sup>U) to reduce the host cell immune response and enhance mRNA stability. Encapsulation of Firefly Luciferase mRNA (Cap-1; mo<sup>5</sup>U) in lipid nanoparticles (LNPs) can be used for mRNA delivery and expression of luciferase protein *in vitro* or *in vivo*.<sup>3,4</sup>

## 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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[734] 971-3335  
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