

# PRODUCT INFORMATION



## Cy5 Firefly Luciferase mRNA (Cap-1; mo<sup>5</sup>U)

Item No. 41965

### Overview and Properties

**Synonym:** Cy5 Firefly Luciferase mRNA (Cap-1 5-moUTP)

**Storage:** 80°C (as supplied)

**Stability:** ≥6 months

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

**Concentration:** 1 mg/ml

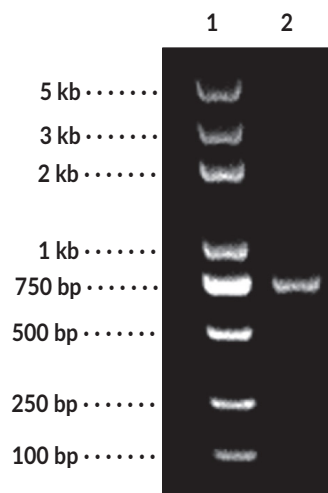
**Chemiluminescence:** ~560 nm

**Fluorescence**

**Ex./Em.:** 650/670 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 1.0% 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.

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## Description

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Cy5 Firefly Luciferase mRNA 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</sup> It is capped using a co-transcriptional capping method, resulting in the naturally occurring Cap 1 structure with high capping efficiency. Cy5 Firefly Luciferase mRNA is also polyadenylated and modified with 5-methoxy-UTP (mo<sup>5</sup>U) to reduce host cell immune response, increase mRNA stability, and enhance translation initiation. Cy5 (Item No. 30752) is a cyanine-containing fluorochrome with excitation/emission maxima of 650/670 nm, respectively.<sup>2</sup> Encapsulation of Cy5 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*.<sup>3</sup>

## References

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1. Baldwin, T.O. Firefly luciferase: The structure is known, but the mystery remains. *Structure* **4(3)**, 223-228 (1996).
2. Suzuki, T., Matsuzaki, T., Hagiwara, H., *et al.* Recent advances in fluorescent labeling techniques for fluorescence microscopy. *Acta Histochem. Cytochem.* **40(5)**, 131-137 (2007).
3. Li, J., Wu, Y., Xiang, J., *et al.* Fluoroalkane modified cationic polymers for personalized mRNA cancer vaccines. *Chem. Eng. J.* **456**, 140930 (2023).

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