Tinzyme Co., Limited

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Firefly Luciferase mRNA (N1-Me-Pseudo UTP)

Product Number: M050804

Shipping and Storage

Store at -20℃ with RNase Free Water as the storage buffer.

Component

Component	M050804	M050804
Firefly Luciferase mRNA (N1-Me-Pseudo UTP)	100μg	1mg

Description

Luciferase is a collective term for enzymes in nature that can produce biological fluorescence, with the most representative being from the North American fluorescent insect (Photonus pyralis). The Firefly Luciferase mRNA (N1-Me Pseudo UTP) sequence is derived from Photonus pyralis and underwent point mutations on the basis of the wild-type sequence, significantly improving the protein's stability and pH range. Once the product enters the cell, it will express luciferase, which can catalyze the oxidation of substrate D-luciferin to oxyluciferin. During the oxidation process of D-luciferin, bioluminescence will be generated at a wavelength of about 560nm and measured by luminometer or liquid scintillation analyzer. Firefly Luciferase is a commonly used bioluminescent reporter gene that can be used as a control for studying the translation efficiency, cell viability, and in vivo imaging of target genes in mammalian cells. This product replaces natural UTP with N1-Me Pseudo UTP, effectively reducing the autoimmunogenicity of mRNA in mammalian cells and enhancing mRNA stability. It also simulates mature mRNA with a 5 'Cap 1 structure and a 3' poly (A) tail, making it an ideal choice for studying transfection and expression using various assays.

This product is a mature mRNA with a 5 'Cap 1 structure and a 3' poly (A) tail synthesized using the T7 High Yield RNA Transcription Kit (E131) and modified with Cap 1 Capping System Kit (CP082) (Figure 1).

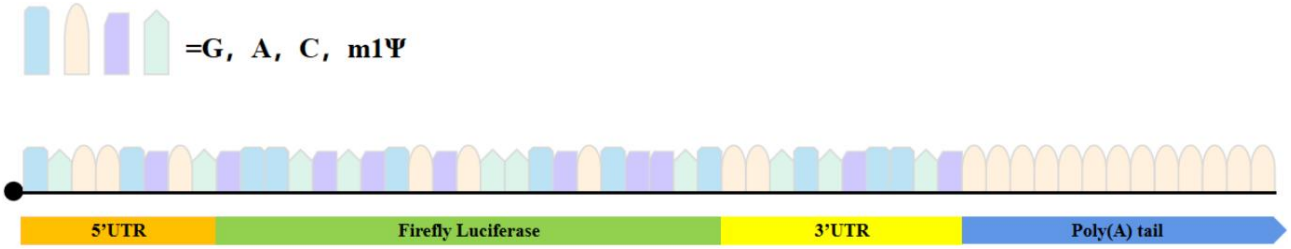

Figure 1. Firefly Luciferase mRNA (N1 Me Pseudo UTP) structure, mRNA length 2197nt, all UTPs replaced with N1 Me Pseudo UTP.

Features

1. The Cap 1 structure is more suitable for mammalian systems and has higher translation efficiency than the Cap 0 structure (ARCA and m7Cap). Replacing UTP with modified base N1-Me Pseudo UTP can reduce the intrinsic immune stimulation of IVT mRNA and enhance protein translation. The addition of Poly (A) tail inhibits RNA mediated innate immune activation, increasing the stability and lifespan of mRNA in vivo and in vitro. Poly (A) also plays an important role in improving the efficiency of translation initiation.
2. The experimental method is simple and fast, with stable results and good reproducibility.
3. MRNA is directly expressed in the cytoplasm with stable transfection efficiency.

Application

1. As a reporting material for gene regulation and functional research.
2. Suitable for detection of mRNA delivery, translation efficiency, cell viability, and in vivo imaging.

Quality control

No residual RNA enzyme, single mRNA electrophoresis band, and stable transfection efficiency.

Related products

Product Number	Product Name
M062	Vaccinia Capping Enzyme
TR01	T7 RNA Polymerase
M072	mRNA Cap 2´O Methyltransferase
GMP-RI01	RNase Inhibitor, GMP Grade
M012	Poly(A) Polymerase
M036	Pyrophosphatase, Inorganic (yeast) (ppase)
TM01	T7 RNA Transcription Enzyme Mix
M050801	eGFP mRNA
M050802	Luciferase mRNA