Product Data Sheet

Product Name: Cy5 Fluc-eGFP mRNA with N1-Me-pUTP(5’CAP)
Cat. No.: GM10018

Chemical Properties

Purity	>98%	Extinction Coefficient	
Formula		M.Wt	
Salt Form		Concentration	1mg/mL
Buffer	1 mM Sodium Citrate, pH 6.4	Storage	-40°C or below
Synonyms		Backbone	
Base Analog		Sugar Type	
Nucleotide Category			

Background

Cy5 Fluc-eGFP mRNA with N1-Me-pUTP (5'CAP) is a luciferase green fluorescent protein mRNA transcribed in vitro by simulating mRNA processing in eukaryotes. Cy5 Fluc-eGFP mRNA with N1-Me-pUTP(5’CAP) carries Cy5-UTP modification, N1-Me-pUTP modification (Cy5-UTP: N1-Me-pUTP=3:1 (molar ratio)), Cap 1 cap structure, and poly (A) tail, increasing mRNA stability and translation efficiency[1]. N1-Me-pUTP is a methyl modification of naturally occurring pseudouridine pUTP, catalyzed by N1 specific pseudouridine methyltransferase Nepl present in archaea and eukaryotes[2]. This product uses N1-Me-pUTP instead of UTP, effectively enhancing RNA stability while reducing anti RNA immune response[2]. Cy5 Fluc-eGFP mRNA with N1-Me-pUTP (5'CAP) can be used as a standard to detect the transfection efficiency of different transfection reagents, and can also be used as a control to study the transfection, localization, and expression of fluorescent proteins in mammalian cells.

Fluc-eGFP fluorescent protein is a fluorescent reporter gene commonly used in molecular biology research. This product connects firefly luciferase mRNA and green fluorescent protein eGFP mRNA through Linker and can be used for the detection of two reporter

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gene experiments. Cy5 Fluc-eGFP mRNA with N1-Me-pUTP (5'CAP) can directly express proteins in the cytoplasm without relying on promoters, with a faster protein expression rate than transfection with deoxyribonucleotides. The protein expression level is directly related to the mRNA transfection level, and there is no risk of gene integration.

After transfection with N1-Me-pUTP (5'CAP), Cy5 Fluc-eGFP mRNA can express strong and bright green fluorescent protein eGFP and firefly luciferase protein in cells. The excitation/emission wavelengths of eGFP are 488/509nm, respectively; firefly luciferase catalyzes the spontaneous fluorescence and chemiluminescence of luciferin or fatty aldehydes, with wavelengths of approximately 550-570nm[3]. Cy5 is a commonly used cyanine fluorescent dye, with maximum excitation/emission wavelengths of 650/670nm, respectively.

References:

[1]. Callum J C Parr, et al.N 1-Methylpseudouridine substitution enhances the performance of synthetic mRNA switches in cells. 2020 Apr 6;48(6):e35. doi: 10.1093/nar/gkaa070.

[2]. Pedro Morais, Hironori Adachi, Yi-Tao Yu.The Critical Contribution of Pseudouridine to mRNA COVID-19 Vaccines. 2021 Nov 4;9:789427. doi: 10.3389/fcell.2021.789427.

[3]. JoÃo M M LeitÃo, Joaquim C G Esteves da Silva. Firefly luciferase inhibition. 2010 Oct 5;101(1):1-8. doi: 10.1016/j.jphotobiol.2010.06.015. Epub 2010 Jul 3.