Product Data Sheet

Product Name: Cy5 eGFP mRNA with N1-Me-pUTP (5’CAP)
Cat. No.: GM10016

Chemical Properties

Purity	Extinction Coefficient	
Formula	M.Wt	
Salt Form	Concentration	
Buffer	Storage	-40°C or below
Synonyms	Backbone	
Base Analog	Sugar Type	
Nucleotide Category		

Background

Cy5 eGFP mRNA with N1-Me-pUTP (5'CAP) is a green fluorescent protein mRNA transcribed in vitro by simulating mRNA processing in eukaryotes. Cy5 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]. Cy5 eGFP mRNA (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.

Green fluorescent protein eGFP is a fluorescent reporter gene commonly used in molecular biology research. Cy5 eGFP mRNA (5'CAP) can directly express proteins in the cytoplasm without relying on promoters, with a faster protein expression rate than transfected DNA. 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 eGFP mRNA can express strong and bright green fluorescent protein in cells, with maximum excitation/emission wavelengths of 488/509nm, respectively. Cy5 is a commonly used cyanine fluorescent dye, with maximum excitation/emission wavelengths of 650/670nm, respectively.

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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[3].

References:

[1]. Jemielity J, Fowler T, Zuberek J, et al. Novel "anti-reverse" cap analogs with superior translational properties. RNA. 2003;9(9):1108-1122

[2]. 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.

[3]. 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.

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