eGFP circRNA
(Circular mRNA encoding enhanced Green Fluorescent Protein)

Description

Ready-to-use stabilized circular mRNA encoding eGFP
Concentration: 1.0 mg/mL
Buffer: 1 mM Sodium Citrate, pH 6.4
Full circRNA length: 1436 nt
Molecular weight: #**MRNA130:** 461380 g/mol

eGFP circRNA has been designed to produce high eGFP protein level with enhanced duration of expression. OZB circular mRNA is produced by *in vitro* transcription followed by ribozyme-mediated circularization[1]. Circular mRNA is a covalently closed, single-stranded RNA ring molecule that lacks free 5' and 3' ends. Lacking a canonical 5' cap structure, circRNAs can initiate translation through internal ribosomal entry site (IRES) enabling protein expression in both cells and animals. Compared with the linear mRNA, circRNA is highly stable due to its covalently closed ring structure, which protects it from exonuclease-mediated degradation. Given that artificial circRNA can correctly express proteins in mammalian cells and exhibits low immunogenicity, purified artificial circRNA may be suitable for both *in vitro* and *in vivo* vaccine or therapeutic medicine studies [1-3]. mRNA #**MRNA130** contains no modified nucleosides.

Applications and detection

eGFP circRNA can be used as control of transfection efficiency. GFP detection can be achieved by fluorescent or confocal microscopy. The GFP produced has an excitation peak at 470-480 nm and emission peak at 510 nm. GFP expression level can also be monitored by fluorescence-activated cell sorter analysis (FACS), western blot etc...

1. Wesselhoeft RA, *et al.*, Nat Commun., 2018. DOI: 10.1038/s41467-018-05096-6.

2. Shen, Y., Li, B., Dong, L. *et al.* Nat Commun., 2025. DOI.org/10.1038/s41467-025-62607-y.

3. Qu L, *et al.* Cell., 2022. DOI: 10.1016/j.cell.2022.03.044.

General considerations on OZB's mRNA

mRNA transfection provides several advantages over plasmid DNA (pDNA) delivery. It does not require nuclear uptake for being expressed since translation of mRNA occurs directly into cytoplasm. Indeed, nuclear delivery (transport through nuclear membrane) is one the principal barriers for transfecting slow or non-dividing cells and consequently, mRNA transfection is particularly attractive for such purposes. This approach presents also the advantage of being non-integrative which is particularly appealing for stem cells, regenerative medicine or vaccine fields. Contrary to pDNA, mRNA cannot lead to genetic insertion causing mutations. Moreover, the protein expression from the mRNA is promoter-independent and faster than with DNA. For transfection we recommend RmesFect™ (#RM21000) and RmesFect™ Stem (#RS31000).

Quality Controls

Items	Specification	Standard QC	Superior Grade QC*
Integrity	Agarose gel mobility and HPLC	✓	✓
Concentration	1mg/ml +/- 5%	✓	✓
A260/280	>1.8 for Unmodified mRNAs >1.7 for chemically modified mRNAs	✓	✓
Sterility	Absence of bacterial growth at 37°C	✓	✓
*Functionality***	Test for protein expression	✓	✓
Endotoxin	<0.5 EU/mL		✓
dsRNA	<0.05%		✓

* Our catalog RNAs undergo standard QC. Superior Grade QC can be performed as an additional prestation.
** For reporter RNAs only for catalog RNAs. Can be included in superior Grade QC.

Certificate of analysis on demand.

Use, handling and storage

For Research Use Only. Not for use in humans. Not for use in diagnostic or therapeutic purposes.

Long term storage (months): -80°C.

Short term storage (few days): -20°

We recommend aliquoting the RNA solution for a better storage. Follow good laboratory practices for RNA handling (work on ice, avoid freeze/thaw cycles, do not vortex, use RNAse free water and barrier tips, ...).

Rev 11/26 CS

Kit contents

eGFP circRNA-20: 20 µg.
eGFP circRNA-100: 100 µg.

Related Products

Ref	Description
#**RM20500/21000**	RmesFect™ transfection reagent (mRNA)
#**RS30500/31000**	RmesFect™ Stem transfection reagent (mRNA)
#**MRNA11/15/22**	mRNA GFP unmodified or 5moU or N1-mpU
#**MRNA107/108/109**	ExploCap GFP mRNA unmodified, 5moU or N1-mpU

Custom RNAs are also available now!

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This product is sold in accordance with our general conditions of sale that you can find on our website: https://ozbiosciences.com/content/3-terms-and-conditions.