

saRNA GFP (self-amplifying RNA encoding eGFP)

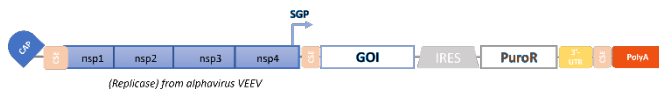
Description

Ready-to-use stabilized saGFP puroR RNA
 Concentration: 1.0 mg/mL in 1 mM Sodium Citrate, pH 6.4
 mRNA length: 9821 nt .
 #**MRNA70** Molecular weight: 3,17 E+06 g/mol.
 #**MRNA71** Molecular weight: 3,20 E+06 g/mol.

OZB saGFP RNA has been constructed based on replicons of positive-sense ((+)-RNA) viruses (Venezuelan equine encephalitis Virus (VEEV)), where the coding sequence of the viral structural proteins is replaced with that of a gene of interest (GOI, here GFP), while retaining the coding sequences of non-structural proteins (NSPs), including the viral RNA-dependent RNA polymerase. Please note that OZB saRNAs encodes also for Puromycin Resistance Cassette, which does not alter the expression of the GOI but can be used for cell selection (Fig1).

SaGFP RNAs have been designed to produce high expression level of GFP protein with enhanced length of duration (see results). OZB mRNAs are produced by *in vitro* transcription. mRNAs are stabilized at the 5' end by modified nucleotides capping (Cap1) and contain a poly(A) tail at the 3' end. Sequences have been optimized to yield improved stability and performance. mRNA #**MRNA70** does not bear any additional nucleotide modifications while #**MRNA71** is modified with 5-methyl-Cytidine (m5C) (100% replacement of Cytidine).

Fig1. Structure of OZB saRNAs #**MRNA70** (unmodified nucleotides) and #**MRNA71** (m5C).



Applications

Self-amplifying RNAs (saRNAs) also called "Replicons" are the next generation of RNA vaccines. Their advantage over conventional mRNA vaccine platforms relies on the viral replication machinery, which amplifies the mRNA of the encoded gene of interest within target cells. In recent years, saRNA vaccines have been clinically tested with the hope of reducing the vaccination dose compared to the conventional mRNA approach. Replicons induce potent humoral and cellular responses with few adverse effects upon a minimal, single-dose immunization. Delivery of replicons is achieved with virus-like replicon particles (VRPs), or in nonviral vehicles such as liposomes or **lipid nanoparticles (LNPs)**.

Synthetic mRNAs and saRNAs resemble fully matured mRNAs with 5' cap1 structure and 3' polyA tail, therefore ready to be translated by the ribosome.

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 of the principal barriers for transfecting slow or non-dividing cells and consequently, mRNA transfection is particularly attractive for such purpose. 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 may not lead to genetic insertion causing mutations. Moreover, the protein expression from the mRNA is promoter-independent and faster than with DNA.

For saRNA transfection reagent, please contact us. saRNA can also be encapsulated into LNPs at OZ Biosciences with our proprietary ionizable lipids upon custom request.

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

References:

Jose J, Snyder JE, Kuhn RJ. A structural and functional perspective of alphavirus replication and assembly. *Future Microbiol.* 2009 Sep;4(7):837-56. doi: 10.2217/fmb.09.59. PMID: 19722838; PMCID: PMC2762864.

Spuul P, Balistreri G, Hellström K, Golubtsov AV, Jokitalo E, Ahola T. 2011. Assembly of Alphavirus Replication Complexes from RNA and Protein Components in a Novel trans-Replication System in Mammalian Cells. *J Virol* 85:.. <https://doi.org/10.1128/jvi.00085-11>.

Comes, Jerome D.G. et al. Rise of the RNA machines – self-amplification in mRNA vaccine design. *Trends in Biotechnology*, Volume 41, Issue 11, 1417 – 1429. DOI: 10.1016/j.tibtech.2023.05.007

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Kit contents

saRNA GFP-20: 20 µg of saRNA.

saRNA GFP-100: 100 µg of saRNA.

saRNA GFP-1000: 1 mg of saRNA.

Storage

RNAs must be stored at -80°C.

We recommend to aliquot the RNA solution for a better storage and avoid freeze/thaw cycles.

Related Products

Ref	Description
#MRNA72/73	saRNA Luc unmodified or 5mC

Discover the complete list of mRNA at: www.ozbiosciences.com
Custom mRNAs are also available!

Contact Us

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