h Sox2 mRNA
(mRNA encoding human Sox2 transcription factor)

Description

Ready-to-use stabilized h Sox2 mRNA
Cap Modification: Cap 1 | **Poly (A) Tail:** Yes
Concentration: 1.0 mg/mL
Buffer: 1 mM Sodium Citrate, pH 6.4
Full length mRNA: 1172 nt
Molecular weights: #**MRNA61:** 379770 g/mol; #**MRNA62:** 383880 g/mol; #**MRNA63**: 381825 g/mol

h Sox2 mRNAs have been designed to produce high expression level of human Sox2 protein. 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. h Sox2 mRNA #**MRNA61** does not bear any additional nucleotide modifications while #**MRNA62** is modified with 5-methoxyuridine (5moU), #**MRNA63** is modified with N1-methyl-pseudouridine to reduce innate immune response.

Applications

SRY-box transcription factor 2 (Sox2) gene encodes a member of the SRY-related HMG-box (SOX) family of transcription factors involved in the regulation of embryonic development and in the determination of cell fate. The product of this gene is critical for early embryogenesis and for embryonic stem cell pluripotency[1]. Mutations in this gene have been associated with optic nerve hypoplasia and with syndromic microphthalmia, a severe form of structural eye malformation. Sox2 has also been described to enhance the reprogramming of somatic cells to the pluripotent state together with other genes OCT3/4, c-MYC, KLF4. Their ectopic expression induces pluripotent stem cells (iPSC)[2]. Furthermore, SOX2 is a major player in cancer and a potential therapeutic target[3].

1. Hagey DW., *et al.*, Development, 2022. DOI:10.1242/dev.200547
2. Karagiannis P., *et al.*, Phys Rev., 2019. DOI:10.1152/physrev.00039.2017.
3. Wuebben EL., *et al.*, Oncotar., 2017. DOI:10.18632/oncotarget.16570.

General considerations on OZB's mRNA

Sox2 mRNAs 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 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 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 fragment analyzer	✓	✓
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	✓	✓
Endotoxin	<0.5 EU/mL		✓
dsRNA	<0.5%		✓

* Our catalogue mRNAs undergo the standard QC. Superior Grade QC can be performed as an additional prestation.

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

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mRNA Stability

RNA can suffer degradation when not handled, stored, or used properly. In order to assess the stability of OZ Biosciences mRNAs, we have tested a randomly chosen RNA from our catalog and submitted it to several freeze/thaw cycles as well as a 15-day storage at room temperature (RT). mRNA did not show any sign of degradation in any condition as observed on agarose gel (*cf* Stability note available on our website).

Kit contents

SOX2 mRNAs-20: 20 µg of mRNA.
SOX2 mRNAs-100: 100 µg mRNA.
SOX2 mRNAs-1000: 1 mg of mRNA.

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
#**MRNA12/16/24**	mRNA LUC unmodified or 5moU or N1-mpU
#**MRNA40/41/42**	mRNA OVA unmodified or 5moU or N1-mpU
#**MRNA58/59/60**	mRNA c-Myc unmodified or 5moU or N1-mpU
#**MRNA64/65/66**	mRNA Nanog unmodified or 5moU or N1-mpU
#**MRNA80/81/82**	mRNA KLF4 unmodified or 5moU or N1-mpU
#**MRNA83/84/85**	mRNA OCT4 unmodified or 5moU or N1-mpU
#**MRNA86/87/88**	mRNA LIN28 unmodified or 5moU or N1-mpU

Custom mRNAs are also available now!

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