TGF-α mRNA
(mRNA encoding human Transforming Growth Factor Alpha 1)

Description

Ready-to-use stabilized TGFα1 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: 701 nt
Molecular weights: #**MRNA92:** 226560 g/mol; #**MRNA93:** 229770 228165 g/mol; #**MRNA94**: 228165 g/mol

TGF-α1 mRNAs are designed to produce high expression level of TGFα 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 are optimized to yield improved stability and performance. TGF-α1 mRNA #**MRNA92** does not bear any additional nucleotide modifications while #**MRNA93** is modified with 5-methoxyuridine (5moU), #**MRNA94** is modified with N1-methyl-pseudouridine to reduce innate immune response.

Applications

TGF-α is a polypeptide with mitogenic properties and belongs to the epidermal growth factor (EGF) family. It was initially identified in the conditioned media of sarcoma cells through its ability to promote the transformation of normal cultured cells[1]. It activates various signaling pathways through the EGF receptor (EGFR), initiating cascades that promote cell survival and proliferation. TGF-α, like other EGFR ligands are among the most important regulators of EGFR signaling activation, contributing to controlling its activity on tissues homeostasis and organ development[2]. Although soluble human TGF-α is a 50-amino acid polypeptide, it is synthesized as a 160-amino acid, 18-kDa, type 1 membrane protein termed pro-TGF-α[4].
This mRNA encodes the transforming growth factor alpha isoform 1 preproprotein. TGF-α1 has been associated with many types of cancers, and it may also be involved in some cases of cleft lip/palate.

1. de Larco JE, *et al.*, Proc Natl Acad Sci U S A. 1978, Aug;75(8):4001-5.
2. Tito C, *et al.*, J Biomed Sci. 2025, Feb 19;32(1):24.
3. Marquardt H, *et al.*, Science. 1984, Mar 9;223(4640):1079-82.
4. Derynck R, *et al.*, Cell. 1984, Aug;38(1):287-97.

General considerations on OZB's mRNA

TGF-α 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 HPLC	✓	✓
Concentration	1mg/ml +/- 5%	✓	✓
A260/280	>1.8 for Unmod, >1.7 for modified	✓	✓
Sterility	Absence of growth after 14 days	✓	✓
Endotoxin	<0.5 EU/mL		✓
dsRNA	<0.5%		✓

* our catalogue mRNA 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°C.

We recommend to aliquot the mRNA solution for a better storage and to work on ice. Follow good laboratory practices for mRNA handling (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 use properly. In order to assess how stable are OZ Biosciences mRNA, we have tested a randomly chosen RNA from our catalog, and submitted it to several freeze/thaw cycles as well as a 15 days storage at room temperature (RT). mRNA did not show any sign of degradation in both experiments (*cf* Stability note available on our website).

Kit contents

TGF-α1 mRNAs-20: 20 µg of mRNA.
TGF-α1 mRNAs-100: 100 µg mRNA.
TGF-α1 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
#**MRNA98/99/100**	mRNA INF-γ unmodified or 5moU or N1-mpU
#**MRNA95/96/97**	mRNA INF-α unmodified or 5moU or N1-mpU
#**MRNA89/90/91**	mRNA TGF-β unmodified or 5moU or N1-mpU
#**MRNA101/102/103**	mRNA TNF-α unmodified or 5moU or N1-mpU

Custom mRNAs are also available now!