h IL-2 mRNA
(mRNA encoding human Interleukin-2 protein)

Description

Ready-to-use stabilized h IL2 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: 676 nt
Molecular weights: #**MRNA55:** 217890 g/mol; #**MRNA56:** 222210 g/mol; #**MRNA57**: 220050 g/mol

h IL-2 mRNAs have been designed to produce high expression level of Interleukin-2 (IL-2) proteins. 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 IL-2 mRNA #**MRNA55** does not bear any additional nucleotide modifications while #**MRNA56** is modified with 5-methoxyuridine (5moU), #**MRNA57** is modified with N1-methyl-pseudouridine (N1-mψ) to reduce innate immune response.

Applications

The Interleukin-2 Family contains six kinds of cytokines, namely IL-2, IL-15, IL-4, IL-7, IL-9, and IL-21, all of which share a common γ chain. Many cytokines of the IL-2 family have been reported to be a driving force in immune cells activation. IL-2 is a secreted cytokine produced by activated CD4+ and CD8+ T lymphocytes, that is important for the proliferation of T and B lymphocytes. IL-2 promotes the generation, survival, and functional activity of T_{reg} cells and thus has dual and opposing functions: maintaining T_{reg} cells to control immune responses and stimulating conventional T cells to promote immune responses[1]. The earliest therapeutic application of IL-2 was to boost immune responses in cancer patients[2]. This gene has been reviewed for its involvement in coronavirus biology and is involved in cytokine storm inflammatory response[3].

1. Abbas AK. *et al*., Sci Immunol., 2018. DOI:10.1126/sciimmunol.aat1482.
2. Rosenberg SA. *et al.*, J Immunol., 2014. DOI:10.4049/jimmunol.1490019.
3. Luo XH. *et al.*, Scand J Immunol., 2021. DOI:10.1111/sji.12989.

General considerations on OZB's mRNA

IL-2 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 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, …)

Rev 05/26 CS

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

h IL2 mRNAs-20: 20 µg of mRNA.
h IL2 mRNAs-100: 100 µg mRNA.
h IL2 mRNAs-1000: 1 mg of mRNA.

Related Products

Ref	Description
#**RM20500/21000**	RmesFect™ transfection reagent (mRNA)
#**RS30500/31000**	RmesFect™ Stem transfection reagent (mRNA)

Custom mRNAs are also available now!

Purchaser Notification | Conditions of Sale

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.