

Description

Ready-to-use stabilized h IL-6 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: 854 nt

Molecular weights: #**MRNA131**: 276050 g/mol; #**MRNA132**:

279080 g/mol; #**MRNA133**: 277865 g/mol

Human IL-6 mRNAs have been designed to produce high expression level of Interleukin-6 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. hIL-6 mRNA #**MRNA131** does not bear any additional nucleotide modifications while #**MRNA132** is modified with 5-methoxyuridine (5mOU), #**MRNA133** is modified with N1-methyl-pseudouridine to reduce innate immune response.

Applications

This mRNA encoded a 212 amino-acids secreted protein. Interleukin 6 (IL-6) is a pleiotropic cytokine executing a diverse number of functions¹, well described for its role in inflammation and B-cell maturation. Produced primarily at sites of acute and chronic inflammation, this pyrogenic protein causes fever in individuals with autoimmune diseases or infections. The IL-6 signaling cascade is initiated by IL-6 binding to IL-6R and a second transmembrane protein, gp130, which then triggers the intracellular IL6-signaling pathway².

IL6 is also implicated in various inflammation-related diseases, such as type 1 diabetes and systemic juvenile rheumatoid arthritis. Furthermore, elevated levels of the encoded protein have been associated with viral infections, notably COVID-19³.

¹ Hirano T, IL-6 in inflammation, autoimmunity and cancer, International Immunology, Vol 33 (2021). doi.org/10.1093/intimm/dxaa078

² Kishimoto T et al., Interleukin-6 and its receptor: a paradigm for cytokines. Science (1992) DOI: 10.1126/science.1411569

³ McElvaney O, Curley G, Rose-John S et al. Interleukin-6: obstacles to targeting a complex cytokine in critical illness The Lancet Respiratory Medicine, 2021; 9, 643-654

General considerations on OZB's mRNA

hIL-6 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*
<i>Integrity</i>	Agarose gel mobility and HPLC	✓	✓
<i>Concentration</i>	1mg/ml +/- 5%	✓	✓
<i>A260/280</i>	>1.8 for Unmod, >1.7 for modified	✓	✓
<i>Sterility</i>	Absence of growth after 14 days	✓	✓
<i>Endotoxin</i>	<0.5 EU/mL		✓
<i>dsRNA</i>	<0.5%		✓

* our catalog mRNAs undergo 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, ...).

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

hIL6 mRNAs-20: 20 µg of mRNA.

hIL6 mRNAs-100: 100 µg mRNA.

hIL6 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
#MRNA134/135/136	mRNA hCCL2 unmodified or 5moU or N1-mpU
#MRNA55/56/87	mRNA hIL2 unmodified or 5moU or N1-mpU
#MRNA89/90/91	mRNA TGF-β unmodified or 5moU or N1-mpU
#MRNA92/93/94	mRNA TGF-α unmodified or 5moU or N1-mpU

Custom mRNAs are also available now!