

Description

Ready-to-use stabilized PD-L1 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: 1094 nt

Molecular weights: #**MRNA124:** 354250 g/mol; #**MRNA125:**

358840 g/mol; #**MRNA126:** 356545 g/mol

PD-L1 mRNAs have been designed to produce high expression level of PD-L1 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. PD-L1 mRNA #**MRNA124** does not bear any additional nucleotide modifications while #**MRNA125** is modified with 5-methoxyuridine (5moU), #**MRNA126** is modified with N1-methyl-pseudouridine to reduce innate immune response.

Applications

PD-L1 is a type I transmembrane protein encoded by the CD274 gene in human chromosome 9 with 290 aa, which consists of extracellular domains, transmembrane domains, and intracellular domains¹. Its canonical full-length isoform α , mainly localizing on the cell membrane, can reduce the proliferation of T cells and inducing apoptosis by interacting with the T-cell membrane-locating inhibitory checkpoint molecule PD-1. PD-L1 plays a critical role in induction and maintenance of immune tolerance to self. Cancer cells exploit the expression of PD-L1 to subvert T-cell-mediated immunosurveillance². Increased expression in tumors promotes tumor progression by transmitting inhibitory signals to T cells, leading to the apoptosis, suppression, anergy, and exhaustion of T cells³. PD-1/PD-L1 inhibitory signaling is critical for cancer immune evasion and thus has become one of the major targets in anticancer immunotherapy⁴.

1. Keir ME, et al. PD-1 and its ligands in tolerance and immunity. *Annu Rev Immunol.* (2008). doi: 10.1146/annurev.immunol.26.021607.090331.

2. Burr ML, et al. CMTM6 maintains the expression of PD-L1 and regulates anti-tumour immunity. *Nature* (2017). doi: 10.1038/nature23643.

3. Kornepati, A.V.R., et al. Programmed death ligand 1 signals in cancer cells. *Nat Rev Cancer* (2022). Doi:10.1038/s41568-021-00431-4.

4. Huang X, et al. USP22 Deubiquitinates CD274 to Suppress Anticancer Immunity. *Cancer Immunol Res* (2019). doi: 10.1158/2326-6066.CIR-18-0910.

General considerations on OZB's mRNA

PD-L1 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 Unmodified mRNAs >1.7 for chemically modified mRNAs	✓	✓
<i>Sterility</i>	Absence of bacterial growth at 37°C	✓	✓
<i>Endotoxin</i>	<0.5 EU/mL	✓	✓
<i>dsRNA</i>	<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 aliquoting 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, ...)

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

PD-L1 mRNAs-20: 20 µg of mRNA.

PD-L1 mRNAs-100: 100 µg mRNA.

PD-L1 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
#MRNA121/122/123	mRNA TP53 unmodified or 5moU or N1-mpU
#MRNA127/128/129	mRNA P95HER2 unmodified or 5moU or N1-mpU

Custom mRNAs are also available now!

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