GenScript CD19 CAR mRNA (Cap1, m1Ψ)

The anti-human CD19 CAR mRNA encodes a chimeric antigen receptor (CAR) that specifically targets the CD19 antigen expressed on B cells. This mRNA construct is designed to transiently express the CAR on immune effector cells (such as T cells or NK cells) following transfection, enabling them to recognize and eliminate CD19-positive cells.

The CAR typically consists of an extracellular single-chain variable fragment (scFv) specific to CD19, a hinge and transmembrane domain, and intracellular signaling domains (such as CD28 or 4-1BB and CD3ζ) for activation and persistence. When delivered via mRNA, this approach provides a non-integrating, controllable, and rapid method for generating CAR-expressing immune cells — minimizing genomic risk while enabling flexible dosing and manufacturing. The CD19 CAR mRNA is particularly suited for applications in B-cell malignancies such as acute lymphoblastic leukemia (ALL) and non-Hodgkin lymphoma.

This mRNA is co-transcriptionally capped with Cap1 structure with high capping efficiency. It has 100% substituted with N1-methyl-pseudo-Uridine (m1Ψ) for enhanced expression and reduced immunogenicity. The mRNA has a 100A tail in its sequence, mimicking a mature mRNA.

Name	Cat. No	Scale
CD19 CAR mRNA (Cap1, m1Ψ)	RP-A00079-0.2	0.2 mg

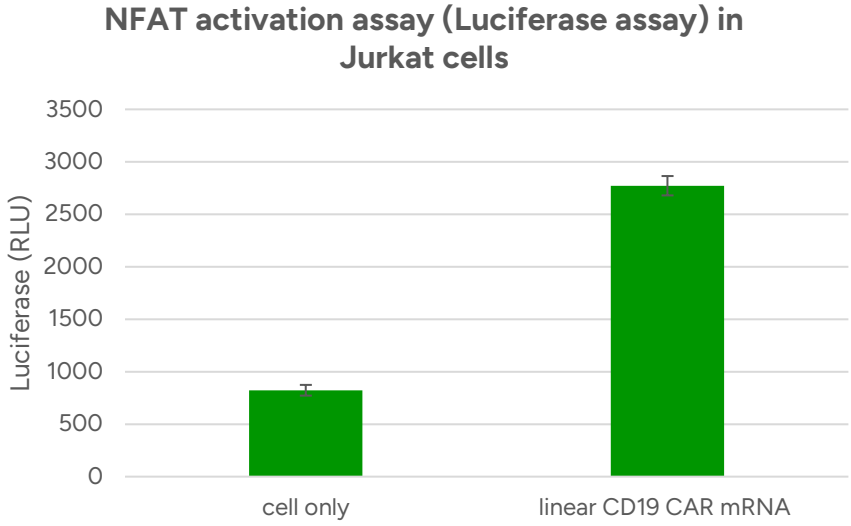
Notice: *For laboratory research use only. Direct human use, including taking orally and injection and clinical use are forbidden.*

Concentration: 1mg/mL
Storage Buffer: 1mM Sodium citrate, pH 6.5
Full mRNA length: 1789 nt
Full mRNA Molecular Weight: 578298 Da
Handling and Storage: Store at -20°C for short term (<3 months), store at -80°C for long term.

Cell Functional Assay:

NFAT Activation Assay (Luciferase) – CD19 CAR mRNA:

In this assay, Jurkat cells were transfected with CD19 CAR mRNA and subsequently co-incubated with NLAM cells expressing the CD19 antigen to assess CAR-mediated signaling. Activation of the CAR triggered the NFAT signaling pathway, leading to luciferase expression under NFAT-responsive promoter control. The resulting luminescence intensity served as a quantitative measure of NFAT activation — where higher luminescence indicates stronger CAR activation and higher binding affinity between the CD19 CAR and its antigen. This assay provides a functional readout of CAR engagement and signaling potency.



CD19 CAR mRNA ORF sequence:

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