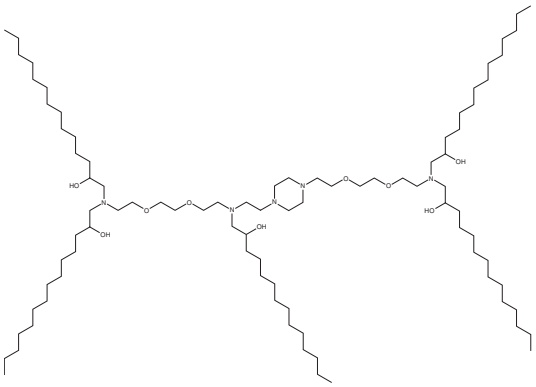
PRODUCT INFORMATION

C14-O2

Item No. 40805

CAS Registry No.:	2639634-77-6
Formal Name:	15-(2-(4-(2-(2-(2-(*bis*(2-hydroxytetradecyl)amino)ethoxy)ethoxy)ethyl)piperazin-1-yl)ethyl)-24-(2-hydroxytetradecyl)-18,21-dioxa-15,24-diazaoctatriacontane-3,26-diol
Synonyms:	C14-2, C14-488
MF:	$C_{88}H_{181}N_5O_9$
FW:	1,453.4
Purity:	≥95% (mixture of isomers)
Supplied as:	A 10 mg/ml solution in ethanol
Storage:	-20°C
Stability:	≥3 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

C14-O2 is supplied as a solution in ethanol. To change the solvent, simply evaporate the ethanol under a gentle stream of nitrogen and immediately add the solvent of choice. C14-O2 is sparingly soluble (1-10 mg/ml) in DMSO.

C14-O2 is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, the ethanolic solution of C14-O2 should be diluted with the aqueous buffer of choice. C14-O2 is slightly soluble (0.1-1 mg/ml) in PBS (pH 7.2). We do not recommend storing the aqueous solution for more than one day.

Description

C14-O2 is an ionizable cationic lipid (apparent pK_a = 6.6) that has been used in the generation of lipid nanoparticles (LNPs) for the delivery of mRNA, single-guide RNA (sgRNA), and protein *in vitro* and *in vivo*.[1,2] LNPs containing C14-O2 and encapsulating mRNA encoding a chimeric antigen receptor (CAR) induce CAR expression and B cell aplasia in mice. LNPs containing C14-O2 and encapsulating mRNA encoding the Cas9 nuclease and sgRNA targeting the gene encoding transthyretin (TTR) induce *TTR* insertion and deletion (indel) formation in the lungs without inducing *TTR* indel formation in the liver or reducing TTR levels in the serum in mice.[3] C14-O2-containing LNPs encapsulating Cas9 protein induce a higher amount of gene editing in mouse lungs than those encapsulating mRNA encoding Cas9.[2] LNPs containing C14-O2 and encapsulating Cas9 protein also induce chloride ion influx to a greater degree than those encapsulating *Cas9* mRNA in human-derived bronchial epithelial gene-edited (16HBEge) cells containing the ΔF508 cystic fibrosis transmembrane conductance regulator (CFTR) mutation.

References

1. Mukalel, A.J., Hamilton, A.G., Billingsley, M.M., *et al.* Oxidized mRNA lipid nanoparticles for in situ chimeric antigen receptor monocyte engineering. *Adv. Funct. Mater.* **34(27)**, 2312038 (2024).
2. Joseph, R.A., Haley, R.M., Padilla, M.S., *et al.* Cas9 protein outperforms mRNA in lipid nanoparticle-mediated CFTR repair. *Nano Lett.* (2025).
3. Haley, R.M., Padilla, M.S., El-Mayta, R.D., *et al.* Lipid nanoparticles for *in vivo* lung delivery of CRISPR-Cas9 ribonucleoproteins allow gene editing of clinical targets. *ACS Nano* **19(14)**, 13790-13804 (2025).

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