

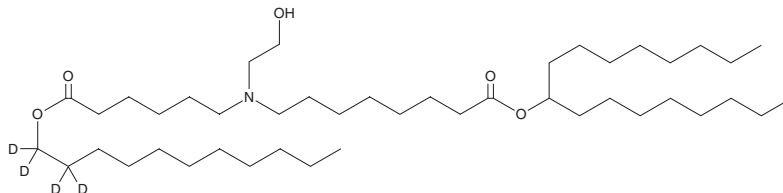
# PRODUCT INFORMATION



## SM-102-d<sub>4</sub>

Item No. 9004898

<b>Formal Name:</b>	8-[(2-hydroxyethyl)[6-oxo-6-(undecyloxy-1,1,2,2-d <sub>4</sub> )hexyl]amino]-octanoic acid, 1-octylnonyl ester
<b>Synonyms:</b>	CAY10779-d <sub>4</sub> , Lipid H-d <sub>4</sub> , LNP-102-d <sub>4</sub>
<b>MF:</b>	C <sub>44</sub> H <sub>83</sub> D <sub>4</sub> NO <sub>5</sub>
<b>FW:</b>	714.2
<b>Chemical Purity:</b>	≥98% SM-102
<b>Deuterium Incorporation:</b>	≥99% deuterated forms (d <sub>1</sub> -d <sub>4</sub> ); ≤1% d <sub>0</sub>
<b>Supplied as:</b>	A 5 mg/ml solution in ethanol
<b>Storage:</b>	-20°C
<b>Stability:</b>	≥1 year



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

## Laboratory Procedures

SM-102-d<sub>4</sub> is intended for use as an internal standard for the quantification of SM-102 (Item No. 33474) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated versus unlabeled).

## Description

SM-102 is an ionizable cationic lipid (pKa = 6.68) that has been used in the generation of lipid nanoparticles (LNPs) for the delivery of mRNA and plasmid DNA *in vitro* and *in vivo*.<sup>1,2</sup> It inhibits inward-rectifying potassium currents mediated by human-ether-a-go-go (hERG), also known as K<sub>v</sub>11.1, in GH3 rat pituitary cells and MA-10 mouse Leydig cells (IC<sub>50</sub>s = 108 and 98 μM, respectively).<sup>3</sup> Administration of luciferase mRNA in SM-102-containing LNPs induces hepatic luciferase expression in mice.<sup>1</sup> LNPs containing SM-102 and Q1-SM-102 (Item No. 41239) as a cationic lipid pair (CLP) and encapsulating a luciferase reporter induce luciferase expression in the lungs and spleen in mice.<sup>4</sup> Intramuscular immunization of LNPs containing SM-102 and encapsulating mRNA encoding the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike glycoprotein increases serum SARS-CoV-2 spike glycoprotein-specific IgG titers in mice.<sup>5</sup> LNPs containing SM-102 and encapsulating mRNA encoding β-catenin increase bone volume in a mouse model of tibia fracture repair when administered *via* injection to the fracture callus.<sup>6</sup> Formulations containing SM-102 have been used in the development of LNPs for delivery of mRNA-based vaccines.

## References

1. Sabnis, S., Kumarasinghe, E.S., Salerno, T., *et al.* *Mol. Ther.* **26(6)**, 1509-1519 (2018).
2. Zhang, W., Pfeifle, A., Lansdell, C., *et al.* *Vaccines (Basel)* **11(10)**, 1580 (2023).
3. Cho, H.-Y., Chuang, T.-H., and Wu, S.-N. *Biomedicines* **9(10)**, 1367 (2021).
4. Zeng, G., He, Z., Yang, H., *et al.* *ACS Appl. Mater. Interfaces* **16(20)**, 25698-25709 (2024).
5. Chen, K., Fan, N., Huang, H., *et al.* *Adv. Funct. Mater.* **32(39)**, (2022).
6. Nelson, A.L., Mancino, C., Gao, X., *et al.* *Bioact. Mater.* **39**, 273-286 (2024).

### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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