

# DC49907 | 5A2-SC8

## Instructions for Use

5A2-SC8 is a dendrimer for miRNA delivery to late-stage liver tumors with low hepatotoxicity. 5A2-SC8 shows potent EC50 < 0.02 mg/kg (siRNA against FVII (siFVII)) in dose-response experiments, and well tolerated in separate toxicity studies in chronically ill mice bearing MYC-driven tumors. 5A2-SC8 is a degradable lipid-like compound (ester-based dendrimer) for small RNAs delivery. 5A2-SC8, was obtained by screening a large library of more than 1500 ester-based dendrimers containing ionizable amino groups, which have three tertiary amine heads and five lipid tails. Based on this library, the in vitro transfection efficiency of different formulations of 5A2-SC8 iLNPs was evaluated, discovering the optimal formulation (5A2-SC8, DOPE, cholesterol, PEG at a molar ratio of 15:15:30:3) of 5A2-SC8 iLNPs for delivering fumarylacetoacetate hydrolase (FAH) mRNA to liver. After the intravenous injection via tail, the model mice of hepatorenal tyrosinemia type I had strong FAH protein expression, which prevented body weight loss and increased the survival rate of hepatorenal tyrosinemia mice. In addition to introducing utility of 5A2-SC8 iLNPs for the therapeutic intervention, the 5A2-SC8 iLNPs containing DOTAP have been used to establish complex mouse models via intravenous injection, including in situ liver-specific cancer model and in situ lung-specific cancer model. Based on this iLNPs delivery system, 5A2-SC8 induced model construction method overcomes the time-consuming and costly disadvantages of traditional animal models establishing methods, including transgenesis and gene engineering in embryonic stem cells.

## Product information

|                    |                                                                                                                                                                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAS No.            | Not available                                                                                                                                                       |
| Chemical Name      | 5A2-SC8                                                                                                                                                             |
| Formula            | C93H173N5O20S5                                                                                                                                                      |
| M.Wt               | 1,841.72                                                                                                                                                            |
| Purity             | ELSD-HPLC>95%                                                                                                                                                       |
| Storage            | Original product: up to 1 year under the storage conditions stated on the vial, kept tightly sealed. Stock solutions: aliquots at -20°C, generally up to one month. |
| Shipping condition | Ships from Shanghai. Pure lipid is stable during ice-pack transport.                                                                                                |

## Formulation & study context

Literature values apply to the cited study only. Administration routes describe research, not clinical instructions.

A complete product-specific formulation has not been verified. No standard ratio is substituted.

|                      |                                      |
|----------------------|--------------------------------------|
| N/P ratio            | Not reported in the verified record  |
| Cargo                | Not available in the verified record |
| Administration route | Not available in the verified record |
| Animal model         | Not available in the verified record |
| Formulation process  | Not available in the verified record |

N/P is a nitrogen-to-phosphate molar ratio. Lipid:cargo mass ratio is a different quantity and must not be used as N/P.

## Stock-solution preparation table

Calculated using product-page MW: 1841.72 g/mol. Volumes are final solution volumes.

| Mass   | 1 mM       | 5 mM      | 10 mM     |
|--------|------------|-----------|-----------|
| 10 mg  | 5.430 mL   | 1.086 mL  | 0.543 mL  |
| 25 mg  | 13.574 mL  | 2.715 mL  | 1.357 mL  |
| 50 mg  | 27.149 mL  | 5.430 mL  | 2.715 mL  |
| 100 mg | 54.297 mL  | 10.859 mL | 5.430 mL  |
| 250 mg | 135.743 mL | 27.149 mL | 13.574 mL |

Volume (mL) = mass (mg) × 1000 / [MW (g/mol) × concentration (mM)]. Mathematical conversions only; not measured solubility. Confirm solvent compatibility and the exact material before preparation.

## Handling & storage

Provided that storage conditions are as stated on the product vial and the vial is kept tightly sealed, the product can be stored for up to 1 year.

Wherever possible, prepare and use solutions on the same day. If stock solutions must be prepared in advance, store them as aliquots in tightly sealed vials at -20°C. Generally, these will be usable for up to one month.

Before use, and prior to opening the vial, allow the product to equilibrate to room temperature for at least 1 hour.

## References

Yehui Sun et al. In vivo editing of lung stem cells for durable gene correction in mice. Science, 2024, doi:10.1126/science.adk9428.