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(71) Applicant: TRANSLATE BIO, INC. [US/US]; 29 Hartwell Avenue, Lexington, MA 02421 (US).

(72) Inventors: KARVE, Shirang; c/o Translate Bio, Inc., 29 Hartwell Avenue, Lexington, MA 02421 (US). DEROSA, Frank; c/o Translate Bio, Inc., 29 Hartwell Avenue, Lexington, MA 02421 (US). VARGAS MONTOYA, Natalia; c/o Translate Bio, Inc., 29 Hartwell Avenue, Lexington, MA 02421 (US). KHANMOHAMMED, Asad; c/o Translate Bio, Inc., 29 Hartwell Avenue, Lexington, MA 02421 (US).

(74) Agent: MENDEZ, Julio J. et al.; Proskauer Rose LLP, One International Place, Boston, MA 02110 (US).

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(54) Title: LIPID NANOPARTICLE FORMULATIONS FOR MRNA DELIVERY

(57) Abstract: The present invention provides, among other things, methods of encapsulating messenger RNA in lipid nanoparticles without the use of flammable solvents, and compositions produced by these methods, for mRNA delivery in therapeutic use. The present invention is, in part, based on the surprising discovery that mRNA can be encapsulated with high efficiency, without using an ethanol solvent, in the presence of an amphiphilic polymer. Thus, the present invention provides safe, cost-effective, and efficient methods of producing LNP formulations from large scale manufacturing processes as well as in low volume formulations for therapeutic applications.

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