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(71) Applicant: **PROVIDENCE THERAPEUTICS HOLDINGS INC.** [CA/CA]; 120, 8832 Blackfoot Trail SE, Calgary, Alberta T2J 3J1 (CA).

(72) Inventors: **GOPALAKRISHNA PANICKER, Rajesh Krishnan**; c/o Providence Therapeutics Holdings Inc., 120, 8832 Blackfoot Trail SE, Calgary, Alberta T2J 3J1 (CA). **KARPOV, Yury**; c/o Providence Therapeutics Holdings Inc., 120, 8832 Blackfoot Trail SE, Calgary, Alberta T2J 3J1 (CA). **JAIN, Aarushi**; c/o Providence Therapeutics Holdings Inc., 120, 8832 Blackfoot Trail SE, Calgary, Alberta T2J 3J1 (CA). **MARTIN OROZCO, Natalia**; c/o Providence Therapeutics Holdings Inc., 120, 8832 Blackfoot Trail SE, Calgary, Alberta T2J 3J1 (CA). **PONDURI, Rajasekhar**; c/o Providence Therapeutics Holdings Inc., 120, 8832 Blackfoot Trail SE, Calgary, Alberta T2J 3J1 (CA).

(74) Agent: **ROBIC AGENCE PI S.E.C. / ROBIC IP AGENCY LP**; 630 Rene-Levesque BLVD West, 20th floor, Montreal, Québec H3B 1S6 (CA).

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(54) Title: GLUTAMIC ACID-BASED LIPIDS, LIPID NANOPARTICLE CONTAINING GLUTAMIC ACID-BASED LIPIDS, AND FORMULATIONS THEREOF

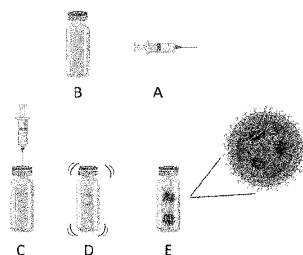
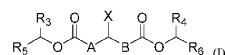


FIG. 9

(57) Abstract: Provided is a glutamic or glutaric acid-based ionizable lipid compound of Formula (I) or a pharmaceutically acceptable salt thereof. The compound can be used to obtain lipid nanoparticles. In some embodiments, the lipid nanoparticle can comprise (a) from about 40 to about 100 mol % of the compound of Formula (I); (b) from 0 to about 20 mol % of a neutral lipid; (c) from 0 to about 50 mol % of a helper lipid; (d) from 0 to about 5 mol % of a polymer-conjugated lipid; and (e) from 0 to about 10 mol % of a hydrophobic component; wherein the mol % are based on the total lipids present in the nanoparticle. In some embodiments, the ionizable lipid compound is a glutamic acid-based ionizable lipid compound.

[Continued on next page]

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