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(54) Title: LIPID NANOPARTICLE WITH NUCLEIC ACID CARGO AND IONIZABLE LIPID

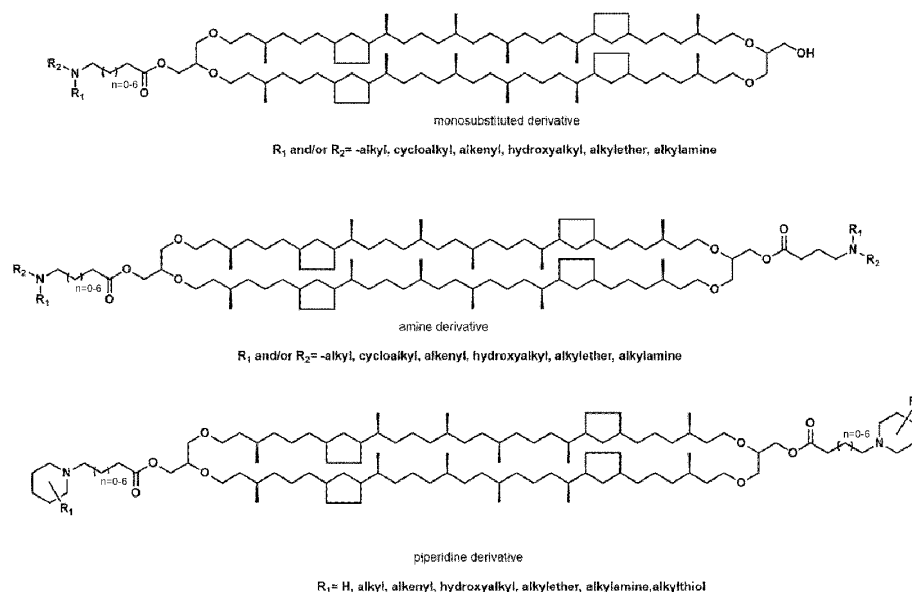


Fig. 1

(57) Abstract: Disclosed is a lipid nanoparticle (LNP) encapsulating a nucleic acid cargo preferably comprising messenger ribonucleic acid (mRNA). The LNP comprises at least an ionizable lipid fraction, and a stabilizer fraction. The stabilizer fraction preferably comprises at least one polyethyleneglycol (PEG) lipid. Furthermore, the ionizable lipid fraction comprises at least one ionizable glycerol dialkyl glycerol tetraether (GDGT) lipid. Also disclosed is a pharmaceutical composition comprising the LNP, such as an mRNA vaccine. In a further aspect, the invention relates to the ionizable GDGT lipids and methods for producing them.

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