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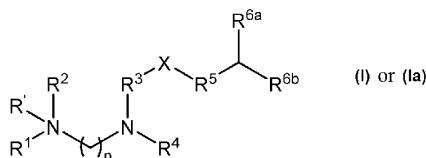
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(54) **Title:** CATIONIC LIPIDS AND COMPOSITIONS THEREOF



(57) **Abstract:** Provided herein are cationic lipids having the Formula I or Ia: and pharmaceutically acceptable salts thereof, wherein R¹, R², R³, R⁴, R⁵, R^{6a}, R^{6b}, X, and n are as defined herein. Also provided herein are lipid nanoparticle (LNP) compositions comprising a cationic lipid having the Formula I or Ia and a capsid-free, non-viral vector (e.g., ceDNA). In one aspect of any of the aspects or embodiments herein, these LNPs can be used to deliver a capsid-free, non-viral DNA vector to a target site of interest (e.g., cell, tissue, organ, and the like).

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