

Described herein are compounds and compositions that are characterized by the Markush formulae (I), (II), (III)- (IV), (V), and (VI) underneath, where at least one terminal amino group is further functionalized by bearing a group of type (i), (ii), or (iii). Such compounds are obtained by reacting a terminal or internal amino group with epoxides, acrylates, or aldehydes bearing lipophilic groups. The resulting amino acid, peptide, polypeptide-lipids (named "APPLs" in the application) are deemed useful as drug delivery systems including nucleotide delivery to cells. Formulae (i), (ii), and (iii).