-continued

```
Met Glu Lys Lys Ile Ser Gly Tyr Thr Thr
 1               5                  10


(2) INFORMATION FOR SEQ ID NO: 6:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 54 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

AGUGCAGGA GCUAAGGAAG CUACCAUGGA GAAGAAGAUC ACUGGAUAUA CCACC          54


(2) INFORMATION FOR SEQ ID NO: 7:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 24 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

GGTATATCCA GTGATCTTCT TCTC                                           24


(2) INFORMATION FOR SEQ ID NO: 8:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 24 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

GGTATATCCA GTGATCTTCT TCTC                                           24


(2) INFORMATION FOR SEQ ID NO: 9:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 21 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

GGUAUAUCCA GUGAUCUUCU T                                              21
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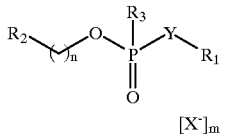
We claim:

1. A phosphonic acid-based lipid having the structure:



or a salt, or solvate, or enantiomers thereof wherein; (a) R_1 is a lipophilic moiety; (b) R_2 is a positively charged moiety; (c) R_3 is a lipophilic moiety of 1 to about 24 carbon atoms, a positively charged moiety, or a negatively charged moiety; (d) n is an integer from 0 to 8; (e) X^- is an anion or polyanion; (f) Y is N or O, and (g) m is an integer from 0 to a number equivalent to the positive charge(s) present on the lipid.

2. A lipid according to claim **1** wherein R_1 is a lipophilic moiety selected from the group consisting of a straight chain alkyl of 1 to about 24 carbon atoms, a straight chain alkenyl of 2 to about 24 carbon atoms, a symmetrical branched alkyl or alkenyl of about 10 to about 50 carbon atoms, a unsymmetrical branched alkyl or alkenyl of about 10 to about 50 carbon atoms, a steroidyl moiety, a glyceryl derivative, a amine derivative, and $OCH(R_4R_5)$ or $N(R_4R_5)$, wherein R_4 and R_5 are straight chain or branched alkyl moieties of about 10 to about 30 carbon atoms.

3. A lipid according to claim **2** wherein the steroidyl moiety is cholesteryl.

4. A lipid according to claim **2** wherein R_1 is an amine derivative selected from a straight chain, branched or cyclic acylamine or alkylamine.

5. A lipid according to claim **2** wherein R_1 is an amine derivative selected from the group consisting of a 3-N-1,2-diacyl-1,2-propanediol-3-amino moiety, a 3-N-1,2-dialkyl-1,2-propanediol-3-amino moiety, and a 3-N-1,2 N,N-diacyl-1,2,3-triaminopropanyl moiety.

6. A lipid according to claim **5** wherein the 3-N-1,2-diacyl-1,2-propanediol-3-amino moiety has a diacyl moiety