CLAIMS

1. A composition comprising at least one ionic liquid comprising:

an anion which is at least one of:

(a) a carboxylic acid which is not a fatty acid; and

(b) a hydrophobic anion comprising carboxylic acid having a pKa of at least 4.0 and a LogP of at least 1.0;

a cation which is a quaternary ammonium comprising an ester group.

2. A composition according to Claim 1, in which:

(a) the cation is acetylcholine.

3. A composition according to Claim 1, in which:

(a) the anion is a carboxylic acid which is not a fatty acid;

(b) the anion has a LogP of less than 1.0;

(c) the anion comprises an aliphatic chain of no more than 3 carbons;

(d) the anion comprises only one carboxylic acid (R-COOH) group;

(e) the anion is selected from the group consisting of: lactic acid; glycolic acid; malonic acid; maleic acid; glutaric acid; citric acid; gluconic acid; propanoic acid; and adipic acid;

(f) the anion is maleic acid; or

(g) the anion is propanoic acid.

4. A composition according to Claim 1, 2 or 3, in which the anion is a hydrophobic anion comprising carboxylic acid having a pKa of at least 4.0 and a LogP of at least 1.0 and has a pKa of at least 4.5, preferably in which the anion has a pKa of at least 5.0.

5. A composition according to any preceding claim, in which the anion comprises a carbon chain of at least 8 carbons, in which the anion comprises a carbon chain with an 8 carbon backbone, in which the anion is geranic acid, octenoic acid, octanoic acid, citronellic acid,

decenoic acid, (9Z)-octadec-9-enoic acid, decanoic acid, (9Z,12Z)-octadeca-9,12-dienoic acid, (R)-5-(1,2-dithiolan-3-yl)pentanoic acid, or in which the anion is hexenoic acid.

6. A composition according to any preceding claim, in which the ionic liquid comprises a ratio of cation to anion of from about 2:1 to about 1:1, such as in which the ionic liquid comprises a ratio of cation to anion of about 2:1, or in which the ionic liquid has a cation:anion ratio of less than 1:1, or in which the ionic liquid has a cation:anion ratio with an excess of cation.

7. A composition according to any preceding claim, comprising a first ionic liquid and at least a second ionic liquid, preferably in which the first ionic liquid and the second ionic liquid each comprise a different anion.

8. A composition according to any preceding claim, further comprising at least one active compound in combination with the at least one ionic liquid, preferably in which the active compound comprises a polypeptide, such as an antibody or antibody reagent, preferably in which the active compound has a molecular weight of greater than 450, preferably greater than 500, or in which the active compound comprises insulin, acarbose, ruxolitinib, or a GLP-1 polypeptide or mimetic or analog thereof.

9. A composition according to Claim 8, in which:

(a) the anion is a hydrophobic anion comprising carboxylic acid having a pKa of at least 4.0 and a LogP of at least 1.0, and the active compound comprises an antibody or antibody reagent;

(b) the anion is hexenoic acid, and the active compound comprises an antibody or antibody reagent;

(c) the anion is a hydrophobic anion comprising carboxylic acid having a pKa of at least 4.0 and a LogP of at least 1.0, the ionic liquid is present at a concentration of less than 10%w/v, and the active compound comprises an antibody or antibody reagent; or

(d) the anion is hexenoic acid, the ionic liquid is present at a concentration of less than 10%w/v, and the active compound comprises an antibody or antibody reagent.

10. A composition according to Claim 8, in which the active compound comprises a nucleic acid, in which the nucleic acid is an inhibitory nucleic acid, in which the nucleic acid is a siRNA, pDNA, or mRNA, or in which the anion is a hydrophobic anion comprising carboxylic acid having a pKa of at least 4.0 and a LogP of at least 1.0 and the active compound comprises a nucleic acid.

11. A composition according to any preceding claim, in which the ionic liquid is at a concentration of at least 0.1%w/v, in which the ionic liquid is at a concentration of from about 10 to about 70%w/v, in which the ionic liquid is at a concentration of from about 30 to about 50%w/v, in which the ionic liquid is at a concentration of from about 30 to about 40%w/v, or in which the ionic liquid is at a concentration of less than 10%w/v.

12. A composition according to any preceding claim, in which the composition is formulated for administration transdermally, to a mucus membrane, orally, subcutaneously, intradermally, parenterally, intratumorally, or intravenously, in which the composition is formulated for subcutaneous administration, in which the composition is formulated for transdermal administration, or in which the mucus membrane is nasal, oral, or vaginal.

13. A composition according to any preceding claim, in which:

(a) the active compound is provided at a dosage of 1-40 mg/kg;

(b) the composition further comprises at least one non-ionic surfactant;

(c) the composition further comprises a pharmaceutically acceptable carrier;

(d) the composition is provided in a degradable capsule;

(e) the composition is an admixture;

(f) the composition is provided in one or more nanoparticles; and/or

(g) the composition comprises one or more nanoparticles comprising the active compound, the nanoparticles in solution or suspension in a composition comprising the ionic liquid.

14. A composition according to any preceding claim for use in medicine, in which the composition is to be administered in combination with at least one active compound to a subject.

15. A composition for use according to Claim 14, in which the composition is to be administered once or in multiple doses.

16. A composition for use according to Claim 14 or 5, in which the administration is transdermally, to a mucus membrane, orally, subcutaneously, intradermally, parenterally, intratumorally, or intravenously, or in which the administration is subcutaneous.

17. A composition according to any preceding claim for use in a method of administering at least one active compound to a subject.

18. A composition for use according to Claim 17, in which the composition is to be administered once or in multiple doses.

19. A composition for use according to Claim 17 or 18, in which the administration is transdermally, to a mucus membrane, orally, subcutaneously, intradermally, parenterally, intratumorally, or intravenously, or in which the administration is subcutaneous.