WHAT WE CLAIM IS:

1) A **method** of localising a sulfhydryl (-SH) group containing biomolecule to a surface comprising the steps:

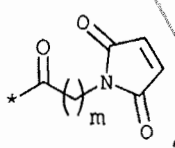
a. Mixing in a volatile reaction buffer a molar excess of the sulfhydryl (-SH) group containing biomolecule with a lipid conjugated maleimide of the structure F-S-L to provide a reaction mix;

b. Incubating the reaction mix for a time and at a temperature sufficient to allow substantially all the lipid conjugated maleimide to have reacted;

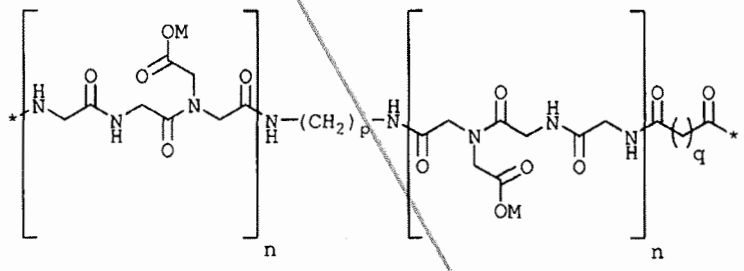
c. Drying the reaction mix to remove the reaction buffer and provide a reaction product; and

d. Contacting a solution of the reaction product with the surface,

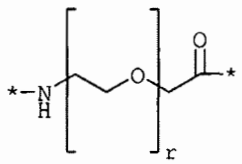
where:

F is ,

S is selected from the group consisting of:



and



L is an amide linked diacyl- or dialkyl- glycerophospholipid,

m is the integer 1, 2 or 3,

M is a monovalent cation or substituent,

n is the integer 1, 2 or 3,

p is the integer 1, 2 or 3,

q is the integer 3, 4 or 5, and

the median value of r is 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 or 16.

2) The method of claim 1 where the sulfhydryl (-SH) group is a cysteine residue (Cys).

3) The method of claim 2 where the sulfhydryl (-SH) group containing biomolecule is a peptide.

4) The method of claim 3 where the sulfhydryl (-SH) group containing biomolecule is a peptide with a cysteine residue (Cys) at or proximal to the C-terminus of the peptide.

5) The method of claim 4 where the sulfhydryl (-SH) group containing biomolecule is a peptide with a cysteine residue (Cys) at the C-terminus.

6) The method of claim 1 where the surface is a membrane.

7) The method of claim 6 where the surface is a cell membrane or the membrane of an enveloped virus.

8) The method of claim 7 where the surface is a cell membrane.

9) The method of claim 8 where the surface is the cell membrane of a red blood cell.

10) The method of claim 1 where the incubating is for a time greater than 8 hours and at room temperature (*circa* 25 °C).

11) The method of claim 1 where the drying is by freeze-drying.

12) The method of claim 1 where the solution of the reaction product is an aqueous solution of the reaction product.

13) The method of claim 12 where the solution of the reaction product is an aqueous saline solution of the reaction product.

14) The method of claim 1 where the volatile reaction buffer is 0.1M 4-methylmorpholine formate (4-MMF) in 30% isopropanol (IPA) at a pH in the range 6.5 to 6.7.

15) The method of any one of claims 1 to 14 where m is the integer 2.

16) The method of any one of claims 1 to 14 where n is the integer 2.

17) The method of any one of claims 1 to 14 where p is the integer 2.

18) The method of any one of claims 1 to 14 where q is the integer 4.

19) The method of claim 1 where each of m, n and p are the integer 2 and q is the integer 4.

20) The method of claim 1 where the median value of r is 6.

21) The method of claim 1 where L is an amide linked diacyl-glycerophospholipid.

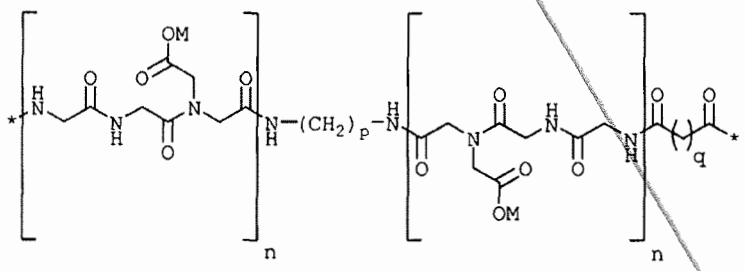
22) The method of claim 21 where L is an amide linked phosphatidylethanolamine or a phosphatidylserine.

23) The method of claim 22 where L is an amide linked phosphatidylethanolamine.

24) The method of claim 23 where L is 1,2-O-dioleoyl-*sn*-glycero-3-phosphatidylethanolamine (DOPE).

25) The method of claim 1 where

S is



26) The method of claim 25 where M is H or CH_3.

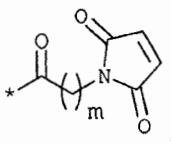
27) The method of claim 26 where M is H.

28) A kit packaged with directions for use in a method of localising a sulfhydryl (-SH) group containing biomolecule to a surface comprising:

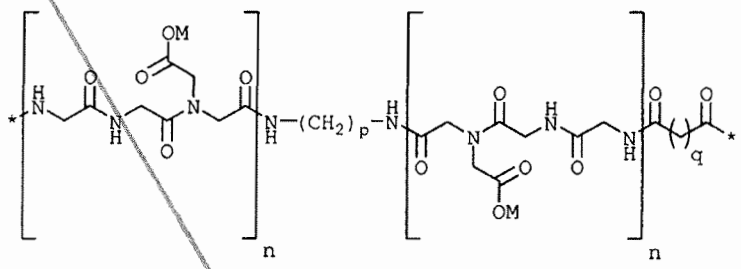
a. an amount of a lipid conjugated maleimide of the structure F-S-L; and

b. a volume of a volatile reaction buffer,

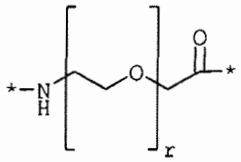
where:

F is ,

S is selected from the group consisting of:



and



L is an amide linked diacyl- or dialkyl- glycerophospholipid,

m is the integer 1, 2 or 3,

M is a monovalent cation or substituent,

n is the integer 1, 2 or 3,

p is the integer 1, 2 or 3,

q is the integer 3, 4 or 5, and

the median value of r is 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 or 16.

29) The kit of claim 28 where the sulfhydryl (-SH) group is a cysteine residue (Cys).

30) The kit of claim 29 where the sulfhydryl (-SH) group containing biomolecule is a peptide.

31) The kit of claim 30 where the sulfhydryl (-SH) group containing biomolecule is a peptide with a cysteine residue (Cys) at or proximal to the C-terminus of the peptide.

32) The kit of claim 31 where the sulfhydryl (-SH) group containing biomolecule is a peptide with a cysteine residue (Cys) at the C-terminus.

33) The kit of claim 28 where the volatile reaction buffer is 0.1M 4-methylmorpholine formate (4-MMF) in 30% isopropanol (IPA) at a pH in the range 6.5 to 6.7.

34) The kit of any one of claims 28 to 33 where m is the integer 2.

35) The kit of any one of claims 28 to 33 where n is the integer 2.

36) The kit of any one of claims 28 to 33 where p is the integer 2.

37) The kit of any one of claims 28 to 33 where q is the integer 4.

38) The kit of claim 28 where each of m, n and p are the integer 2 and q is the integer 4.

39) The kit of claim 28 where where the median value of r is 6.

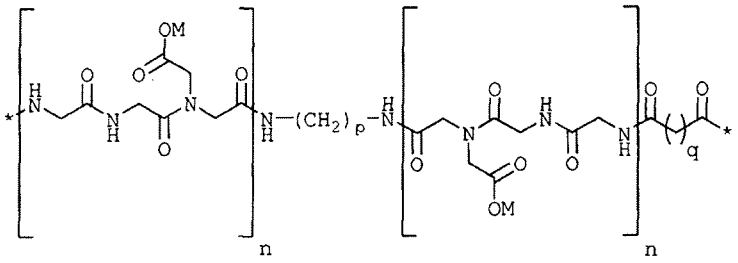
40) The kit of claim 28 where L is an amide linked diacyl-glycerophospholipid.

41) The kit of claim 40 where L is an amide linked phosphatidylethanolamine or a phosphatidylserine.

42) The kit of claim 41 where L is an amide linked phosphatidylethanolamine.

43) The kit of claim 42 where L is 1,2-O-dioleoyl-*sn*-glycero-3-phosphatidylethanolamine (DOPE).

44) The kit of claim 28 where

S is 

45) The kit of claim 44 where M is H or CH_3.

46) The kit of claim 45 where M is H.

WHAT WE CLAIM IS:

1) A **method** of localising a sulfhydryl (-SH) group containing biomolecule to a cell membrane comprising the steps:

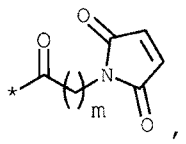
a. Mixing in a volatile reaction buffer a molar excess of the sulfhydryl (-SH) group containing biomolecule with a lipid conjugated maleimide of the structure F-S-L to provide a reaction mix;

b. Incubating the reaction mix for a time and at a temperature sufficient to allow substantially all the lipid conjugated maleimide to have reacted;

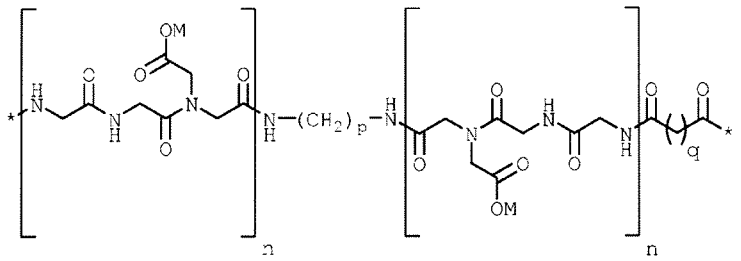
c. Drying the reaction mix to remove the reaction buffer and provide a reaction product; and

d. Contacting an aqueous solution of the reaction product with the cell membrane,

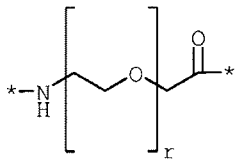
where:

F is ,

S is selected from the group consisting of:



and



L is an amide linked diacyl- or dialkyl- glycerophospholipid,

m is the integer 1, 2 or 3,

M is a monovalent cation or substituent,

n is the integer 1, 2 or 3,

p is the integer 1, 2 or 3,

q is the integer 3, 4 or 5, and

the median value of r is 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 or 16.

2) The method of claim 1 where the sulfhydryl (-SH) group is a cysteine residue (Cys).

3) The method of claim 2 where the sulfhydryl (-SH) group containing biomolecule is a peptide.

4) The method of claim 3 where the sulfhydryl (-SH) group containing biomolecule is a peptide with a cysteine residue (Cys) at or proximal to the C-terminus of the peptide.

5) The method of claim 4 where the sulfhydryl (-SH) group containing biomolecule is a peptide with a cysteine residue (Cys) at the C-terminus.

6) The method of claim 5 where the surface is the cell membrane of a red blood cell.

7) The method of claim 1 where the incubating is for a time greater than 8 hours and at room temperature (*circa* 25 °C).

8) The method of claim 1 where the drying is by freeze-drying.

9) The method of claim 1 where the aqueous solution of the reaction product is an aqueous saline solution of the reaction product.

10) The method of claim 1 where the volatile reaction buffer is 0.1M 4-methylmorpholine formate (4-MMF) in 30% isopropanol (IPA) at a pH in the range 6.5 to 6.7.

11) The method of any one of claims 1 to 10 where m is the integer 2.

12) The method of any one of claims 1 to 10 where n is the integer 2.

13) The method of any one of claims 1 to 10 where p is the integer 2.

14) The method of any one of claims 1 to 10 where q is the integer 4.

15) The method of claim 1 where each of m, n and p are the integer 2 and q is the integer 4.

16) The method of claim 1 where the median value of r is 6.

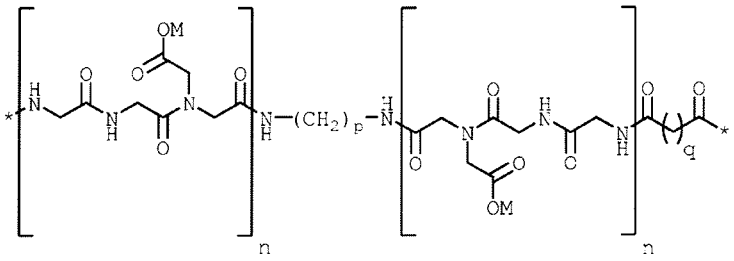
17) The method of claim 1 where L is an amide linked diacyl-glycerophospholipid.

18) The method of claim 17 where L is an amide linked phosphatidylethanolamine.

19) The method of claim 18 where L is 1,2-O-dioleoyl-*sn*-glycero-3-phosphatidylethanolamine (DOPE).

20) The method of claim 1 where

S is



and M is H or CH_3.