CLAIMS

1. A method of separating a vesicle, comprising:

bringing a lipid-membrane-structure-immobilization carrier, in which a lipid membrane structure containing a membrane-fusogenic lipid capable of being fused with a vesicle having a lipid bilayer membrane is immobilized so as to be accommodated inside a recess portion of a carrier into contact with a sample having the vesicle such that membrane fusion occurs between the lipid membrane structure and the vesicle and thereby separating the vesicle from the sample.

2. The method of separating a vesicle according to Claim 1,

wherein a fusant obtained by the membrane fusion between the lipid membrane structure and the vesicle is separated from the sample by using any of external attractive force, size, weight, and affinity.

3. A method of detecting a vesicle, comprising:

detecting a fusant generated by the membrane fusion between the lipid membrane structure and the vesicle in the method for separating a vesicle according to Claim 1.

4. A method of moving a vesicle, comprising:

preparing a substrate having a recess portion where the substrate comprises a first lipid membrane structure containing a first membrane-fusogenic lipid such that an opening portion of the recess portion on the substrate is closed by the first lipid membrane structure;

preparing a fusant by bringing a second lipid membrane structure having a vesicular-shape into contact with a vesicle having a lipid bilayer membrane outside the substrate such that membrane fusion occurs between the second lipid membrane structure and the vesicle where the second lipid membrane structure contains a second membrane-fusogenic lipid capable of being fused with the vesicle and a characteristic-imparting substance attracting the fusant generated outside the substrate to the recess portion of the substrate by using characteristics imparted or changed by the characteristic-imparting substance contained in the fusant; and

fusing the fusant with the first lipid membrane structure provided on the substrate.

5. The method of moving a vesicle according to Claim 4,

wherein the characteristic-imparting substance is a magnetic substance, and

the second lipid membrane structure contains the magnetic substance.

6. A method of detecting a vesicle, comprising:

detecting the fusant in the recess portion in the method of moving a vesicle according to Claim 4.

7. The method of detecting a vesicle according to Claim 6,

wherein a reaction reagent is disposed in the recess portion,

a reaction is caused between the reaction reagent and a constituent of the fusant, and

the reaction or a reaction product generated by the reaction is detected.

8. The method of detecting a vesicle according to Claim 7,

wherein a magnetic force-generating device is disposed on the recess portion.

9. A lipid-membrane-structure-immobilization carrier, comprising:

a lipid membrane structure containing a membrane-fusogenic lipid capable of being fused with a vesicle having a lipid bilayer membrane, the lipid membrane structure being immobilized on a carrier, wherein

the carrier is a substrate,

the substrate has a recess portion, and

the lipid membrane structure is immobilized on the substrate so as to close an opening portion of the recess portion by the lipid membrane structure.

10. A lipid-membrane-structure-immobilization carrier, comprising a lipid membrane structure containing a membrane-fusogenic lipid capable of being fused with a vesicle having a lipid bilayer membrane and a carrier having a recess portion, wherein

the lipid membrane structure is immobilized on the carrier such that the lipid membrane structure is accommodated inside the recess portion.

11. A lipid membrane structure comprising:

a membrane-fusogenic lipid capable of being fused with a vesicle having a lipid bilayer membrane; and

a pH-responsive lipid.

12. A method of fusing vesicles, comprising:

bringing the lipid membrane structure immobilized in the

lipid-membrane-structure-immobilization carrier according to Claim 9 into contact with the vesicle such that membrane fusion occurs between the lipid membrane structure and the vesicle.

13. The method of fusing vesicles according to Claim 12,

wherein a liquid containing the vesicle is mixed with an additive inducing membrane fusion such that the lipid membrane structure and the vesicle contact each other.

14. The method of fusing vesicles according to Claim 12 or 13,

wherein the lipid membrane structure contains a membrane fusion-inducing substance.

15. A method of detecting a vesicle, comprising:

bringing a lipid membrane structure containing a membrane-fusogenic lipid capable of being fused with a vesicle having a lipid bilayer membrane into contact with the vesicle immobilization carrier in which the vesicle is immobilized so as to be accommodated inside a recess portion of a carrier such that membrane fusion occurs between the lipid membrane structure and the vesicle; and

detecting a fusant generated by the membrane fusion between the lipid membrane structure and the vesicle.

16. The method of detecting a vesicle according to Claim 3 or 15,

wherein the lipid membrane structure contains a reaction reagent reacting with a constituent of the vesicle,

the lipid membrane structure is brought into contact with the vesicle such that membrane fusion occurs between the lipid membrane structure and the vesicle,

a reaction is caused between the reaction reagent and a constituent of the vesicle by the membrane fusion between the lipid membrane structure and the vesicle, and

the reaction or a reaction product generated by the reaction is detected.

17. A method of detecting a vesicle, comprising:

attracting a vesicular-shaped lipid membrane structure containing a membrane-fusogenic lipid capable of being fused with a vesicle having a lipid bilayer membrane, a characteristic-imparting substance, and a reaction reagent to a recess portion by using characteristics imparted or changed by the characteristic-imparting substance contained in the lipid membrane structure;

disposing the vesicle in the recess portion where the vesicle is accommodated inside the recess portion;

bringing the lipid membrane structure into contact with the vesicle in the recess portion such that membrane fusion occurs between the lipid membrane structure and the vesicle;

causing a reaction between the reaction reagent and a constituent of the vesicle by the membrane fusion between the lipid membrane structure and the vesicle; and

detecting the reaction or a reaction product generated by the reaction.

18. A method of separating a vesicle, comprising:

bringing a vesicular-shaped lipid membrane structure containing a membrane-fusogenic lipid capable of being fused with a vesicle having a lipid bilayer membrane into contact with the vesicle such that membrane fusion occurs between the

lipid membrane structure and the vesicle and thereby obtaining a sample containing a fusant between the lipid membrane structure and the vesicle in advance;

preparing a substrate having a recess portion where the fusant is to be accommodated inside the recess portion; and

moving the fusant obtained outside the substrate such that the fusant is accommodated inside the recess portion and thereby separating the fusant from the sample.

19. A method of detecting a vesicle, comprising:

bringing a vesicular-shaped lipid membrane structure containing a membrane-fusogenic lipid capable of being fused with a vesicle having a lipid bilayer membrane into contact with the vesicle such that membrane fusion occurs between the lipid membrane structure and the vesicle and thereby obtaining a sample containing a fusant between the lipid membrane structure and the vesicle in advance;

preparing a substrate having a recess portion where the fusant is to be accommodated inside the recess portion;

moving the fusant obtained outside the substrate such that the fusant is accommodated inside the recess portion and thereby separating the fusant from the sample; and

detecting the fusant separated from the sample.