

Claims

1. A method for detecting an antigen, comprising:
binding the antigen to a plurality of membrane units, wherein:
5 each of the plurality of membrane units is individually compartmentalized to ensure signal emitted therefrom to be individually acquired, and each membrane unit is affixed to one of a plurality of corresponding supports,
wherein said each corresponding support can hold said membrane unit;
10 selecting a primary antibody that interacts with the antigen;
binding the primary antibody to the antigen to form immunocomplexes so that each of the plurality of membrane units have immunocomplexes attached thereto;
causing the immunocomplexes to emit signals; and
detecting, from each of the plurality of membrane units, the signal emitted by the
15 immunocomplexes attached thereto.
2. The method of claim 1, wherein
the immunocomplexes are labelled with a labelling substance selected from a group
consisting of reporter enzymes, radioactive isotopes, DNA reporters fluorogenic reporters,
20 electroluminescent tag, and mixtures thereof.
3. The method of claim 2, wherein
the reporter enzymes comprises HRP, AP or glucose oxidase and wherein the
fluorogenic reporters comprise phycoerythrin.
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4. The method of claim 2, wherein
the labeling substance is directly conjugated with the primary antibody or indirectly
conjugated with a secondary antibody against the primary antibody.
- 30 5. The method of claim 4, wherein
the primary antibody, the secondary antibody, or both, are pre-labelled with the labelling
substance.

6. The method of claim 1, wherein
the signals emitted by the immunocomplexes are photons or radiations.
7. The method of claim 1, wherein
5 the signal emitted by the immunocomplexes in each of the plurality of the membrane units
is acquired as a numeric value that corresponds to an intensity of the signal.
8. The method of claim 7, wherein
the intensity of the signal is not converted from an image.
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9. The method of claim 1, wherein
the plurality of supports are attached to a planar structure and spaced away from a planar
surface of the planar structure.
- 15 10. The method of claim 9, wherein
the plurality of supports are attached to the planar structure via a linking member, wherein
the linking member comprises a first end and a second end, and the first end is attached
to the planar structure and one of the plurality of the supports is attached to the linking
member at the second end or at a location between the first end and the second end.
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11. The method of claim 1, further comprising
washing the plurality of membrane units simultaneously in one or more buffer solutions.
12. The method of claim 11, comprising
25 filling the one or more buffer solutions in a plurality of wells in a multi-well plate, and
immersing each of the plurality of membrane units in the buffer solution in one of the
plurality of wells in the multi-well plate.
13. The method of claim 1, comprising
30 filling a buffer solution in one container, and immersing the plurality of membrane units in
the buffer solution in the container.

14. The method of claim 1, wherein
the membrane unit is a piece of nitrocellulose or PVDF or a coating of nitrocellulose or
PVDF on a surface.
- 5 15. The method of claim 6, wherein
the photons are produced by a colorimetric reaction of the labelling substance, a
chemiluminescent reaction of the labelling substance, or a fluorescent emission from the
labelling substance.
- 10 16. A method for immunoblot analysis, comprising:
providing a multi-unit plate comprising a plurality of membrane units spaced away from
one another, wherein:
each of the plurality of membrane units is individually compartmentalized to
ensure signal emitted therefrom to be individually acquired, and
15 each membrane unit comprises a membrane;
binding an antigen to one or more of the plurality of membrane units;
selecting a primary antibody that interacts with the antigen;
binding the primary antibody to the antigen to form immunocomplexes affixed to one or
more of the plurality of membrane units, wherein the primary antibody is directly
20 conjugated with a reporter enzyme, or indirectly conjugated with a reporter enzyme
through one or more secondary antibody; and
detecting from one or more of the membrane units light signals emitted by the reporter
enzyme in the immunocomplexes.
- 25 17. The method of claim 16, further comprising
acquiring light signal emitted from each of the one or more of the membrane units to a
numeric value that corresponds to an intensity of the light signal.
18. The method of claim 17, wherein
30 the intensity of the light signals is not measured based on an image of the light signals.
19. The method of claim 16, wherein
the membrane unit is a sheet of nitrocellulose or PVDF film or a coating of nitrocellulose
or PVDF on a substrate.