

[0185] All documents, patents, publications cited above in the specification are herein incorporated by reference. Various modifications and variations of the present invention will be apparent to those skilled in the art without departing from the scope and spirit of the invention. Although the invention has been described in connection with specific preferred embodiments, it should be understood that the invention as claimed should not be unduly limited to such specific embodiments. Indeed, various modifications of the described modes for carrying out the invention which are obvious to those skilled in the art are intended to be within the scope of the invention.

What is claimed is:

1. A protein microarray, comprising:
 - a solid support;
 - a linker covalently attached to said solid support; and
 - a protein or protein fragment having a terminus that is capable of forming a covalent bond with said linker.
2. The microarray of claim 1, wherein said terminus is a carboxy terminus.
3. The microarray of claim 1, wherein said solid support is glass.
4. The microarray of claim 1, wherein said linker comprises a maleimide group.
5. The microarray of claim 1, wherein said linker comprises a vinyl sulfone group.
6. The microarray of claim 1, wherein said linker comprises a N-hydroxy succinimide group.
7. The microarray of claim 1, wherein said protein or protein fragment is an antibody or antibody fragment.
8. The microarray of claim 7, wherein said antibody or antibody fragment is a single chain antibody.
9. The microarray of claim 1, wherein said microarray has at least 1,000 spots per cm².
10. The microarray of claim 1, wherein said microarray has at least 2,000 spots per cm².
11. A method for attaching a protein to a support surface, said method comprising the steps of:
 - (a) covalently attaching a bovine serum albumin molecule to a support surface;
 - (b) forming an activated carbamate group or activated ester group on an exposed surface of said molecule; and
 - (c) exposing said activated carbamate group or said activated ester group to a binding element comprising an amine, thereby forming a covalent bond between said carbamate or said ester group of said molecule and said amine group of said binding element.
12. The method of claim 11, wherein said forming step comprises exposing said bovine serum albumin to a reagent to form a N-hydroxy succinimide group.
13. The method of claim 11, wherein said binding element is a protein.
14. The method of claim 13, wherein said protein is an antibody or antibody fragment.
15. The method of claim 14, wherein said antibody or antibody fragment is a single chain antibody.
16. The method of claim 11, further comprising the step of blocking any of said activated carbamate or ester groups that have not bound to said binding element.
17. A method for attaching a protein to a support surface, said method comprising the steps of:
 - (a) providing a support surface comprising a first chemical group available for reaction;
 - (b) providing a capture protein comprising a first terminus and a second terminus, said first terminus capable of binding to a ligand, said second terminus comprising a second chemical group; and
 - (c) forming a covalent bond between said first chemical group and said second chemical group, thereby attaching said capture protein to said support surface at said second terminus of said capture protein.
18. The method of claim 17, wherein said capture protein comprises a terminal cysteine.
19. The method of claim 18, wherein said terminal cysteine is at a carboxy terminal.
20. The method of claim 18, wherein said forming step comprises chemically reducing said cysteine.
21. A method for identifying a small molecule regulator of protein binding, the method comprising the steps of:
 - (a) attaching a capture protein on a support surface;
 - (b) exposing said substrate to a ligand for said capture protein and at least one small molecule; and
 - (c) detecting the presence or the absence of binding between said capture protein and said ligand.
22. The method of claim 21, wherein step (a) comprises attaching said capture protein on a BSA-NHS slide.
23. The method of claim 21, wherein step (a) comprises functionalizing said support surface with aldehyde groups.
24. The method of claim 21, wherein step (a) comprises attaching said capture protein in a microarray of at least 1,000 spots per cm².
25. The method of claim 21, further comprising fusing said capture protein to a GST protein.
26. The method of claim 21, further comprising detecting said binding between said capture protein and said ligand through a fluorescent dye.
27. The method of claim 26, wherein said fluorescent dye comprises a hydrophilic polymer moiety.
28. The method of claim 27, wherein said moiety is a polyethyleneglycol.
29. The method of claim 21, wherein step (c) comprises detecting said binding between said capture protein and said ligand through a labeled phage particle displaying an antibody fragment.
30. The method of claim 21, wherein said ligand comprises a family of related proteins.
31. The method of claim 30, wherein said ligand comprises the Bcl-2 family of proteins.
32. The method of claim 21, wherein said capture protein comprises a family of related proteins.
33. A method for identifying a small molecule that selectively affects a cellular pathway, the method comprising the steps of:
 - (a) attaching a microarray of capture proteins on a support surface, said microarray comprises proteins that act in a cellular pathway;
 - (b) exposing said substrate surface to at least one ligand of said capture proteins and at least one small molecule; and