Skysong Innovations
Advancing the Arizona State University Knowledge Enterprise

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Immobilization of Proteins on a Functionalized Surface for Natural Conformation and Optimal Activity

Two-dimensional microarrays have proven useful for a wide range of applications, from ELISA microarrays to basic protein research. However, attaching an antibody, enzyme, or other protein to a functionalized surface is not without its problems. Antibodies are costly and time-consuming to produce and screen, and the process of attaching a protein often alters its conformation. Thus, there is a need for a simple, rapid and inexpensive method to produce a surface with a high density of binding sites, and which orients and binds the protein in its native form (or other desired conformation).

Researchers at Arizona State University have developed a novel, automated method to identify short polypeptides which bind the protein of interest, and then quickly and inexpensively produce a surface functionalized with such polypeptides. This surface binds the molecule of interest non-covalently, additionally allowing control of the molecular orientation.

This method does not require antibodies, biotin or his tags etc., or other modifications, offers many more orientations than possible with covalent coupling, and does not require physiological conditions.

Potential Applications

- Microarrays for proteins in native conformation
- Microarrays for non-protein elements

Benefits and Advantages

- Rapid and inexpensive
- High number of binding sites per unit mass
- Attachment by non-covalent interaction, thus allowing more possible orientations of bound molecule
- Does not require recombinant techniques (amenable to non-protein elements)
- Does not require antibodies, his tags, biotinylation, etc.
- Does not require physiological conditions

For more information about the inventor(s) and their research, please see Dr. Diehnelt's directory webpageDr. Johnston's directory webpage