High Sensitivity Phage Display Protein Detection Method

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Technology description

Summary

This new technology extends the range of protein detection appreciably under the absolute limit of 0.01ng for the Silver stain method. In an average protein molecule this amounts to 20 million molecules. The average cellular concentration of protein is 5000 molecules, so that an amplification system is needed to detect protein on that level. In this method, phage that display specific ligands or antibodies provide such an amplification system and therefore allow for detection. In addition, a particular phage expressing a known binding protein may be used to identify a specific protein and aid in the purification of that specific protein. The identification ability has both diagnostic and therapeutic potential.
The key novel feature of this technology in the market place would be its high sensitivity and the numerous benefits associated with it. It opens up whole new areas of analysis, such as on the cellular level, allowing for looking at protein variations within a single cell. Theoretically, as little as one protein molecule could be detectable.
The potential market for this invention would be in several distinct areas:

Application area

Research -- incorporation into kits to perform complete assays
Purification -- aiding in the manufacturing process
Diagnostic -- detection of variations of a specific protein within a cell
Therapeutic -- identification of specific drug targets through the ability to bind to receptor sites

Institution

NIH - National Institutes of Health

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