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HT Fusion Tag Detection

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Invention Description

Because of their unique recombinant properties, fusion proteins are of intense interest in many biotechnology applications. Current methods to specifically detect expression of fusion proteins exist; but, they are either unsuitable for high throughput (HTP) processes, in the case of western blots, or are non-qualitative, in the case of ELISAs. Assessment of protein purity and HTP quantification of proteins has been realized with capillary electrophoresis (CE) instruments; however CE systems lack the capacity to detect specific proteins of interest. Thus, there exists a need for qualitative HTP assays for detection of fusion protein expression.

Researchers at the Biodesign Institute of Arizona State University have developed a novel method of covalently labeling fusion proteins and qualitatively and quantitatively assaying them with HTP electrophoresis techniques. Fusion proteins are directly labeled with a fusion tag-specific fluorophore; CE instruments are used to specifically detect these fusion proteins within complex samples, without the need for prior purification. Moreover, because the tag is covalently attached, the fusion protein is able to undergo robust downstream processing, including denaturation, without loss of the tag.

This technique has the ability to detect specific expression within lysates, allowing for rapid characterization of starting materials as part of a high throughput protein production pipeline.

Potential Applications

- High throughput, qualitative and quantitative detection of fusion proteins

Benefits and Advantages

- Does not require prior purification
- Does not require antibodies
- Rapid, high-throughput screening of expression
- Fusion proteins can be detected within complex samples
- Because the tag is permanently bound to the protein, the protein may be denatured for downstream processing