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Generation of Recombinant Affinity Reagents

Creating protein affinity reagents on a proteome-wide scale is one of the greatest challenges of modern medicine. High quality reagents to capture proteins are necessary for elucidating protein function, developing new molecular diagnostics and even therapeutics. Recent advances in protein discovery will necessitate the need for affinity reagents to nearly all proteins. Traditionally, affinity selection procedures use individual proteins or peptides as targets, which have a low throughput and require a significant amount of target. In addition, because the targets used in selection are sometimes labile, affinity selections fail. Consequently, achieving a high throughput and efficient affinity selection process remains problematic.

Researchers at Arizona State University in conjunction with collaborators at the University of Illinois at Chicago have developed a method which utilizes arrayed targets in affinity selection of display libraries. This reduces the amount of target needed and improves the throughput of discovering recombinant affinity reagents to a large collection of targets. Further, freshly translated targets are used, which reduces the likelihood of denaturation during storage and freeze thawing. Because arrays of fresh targets are used, multiplexed selection of multiple targets can be performed, reducing the time and cost of generating reagents.

By using arrayed targets in affinity selection experiments, the amount of target needed is reduced, and efficacy is increased, translating into greater throughput and cost savings.

Potential Applications

- Generation of recombinant affinity reagents
- Use the reagents to detect, inhibit or activate target proteins

Benefits and Advantages

- Reduced amount of target needed
- Using freshly made target samples is more effective and reduces the likelihood of denaturing targets during storage and freeze thawing

- The arrayed material is translated fresh before each round of selection reducing the time and cost of generating reagents
- Multiplexed, affinity selection
- Detects phage particle-binding on the array
- Bound phage particles can be removed from a specific spot on the array
- High throughput – thousands of protein targets can be arrayed

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