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Engineered Monomeric Streptavidin

» Reference Number

073.12

» Background

The high affinity interaction of biotin with avidin and streptavidin is well characterized and has been exploited for a variety of diverse uses in biomedical research since the early 1940s.

Alterations of this interaction have expanded its application to column chromatography which has since become a cornerstone technology in the purification of biotinylated biomolecules. Currently, these alterations require in vitro modification of the quaternary structure of these proteins by methods which are expensive and inefficient. More efficient methods to produce these useful proteins are an attractive commercial proposition.

Dr. Sui-Lam Wong at the University of Calgary has recently developed new mutant forms of monomeric streptavidin which are readily overproduced in E.coli in a soluble and functional state. The new mutants exhibit favourable kinetic properties which make them ideal for the preparation of affinity matrices for purification of biotin-tagged molecules. Although optimized for affinity chromatography, these mutants have a wide range of application.

» Areas of Application

- Affinity purification of recombinant biotinylated molecules
- Development of reusable biosensor chips, protein/antibody microarrays, and enzyme bioreactors

» Competitive Advantages

- Successful high-level production of functional monomeric streptavidin using a novel E.coli expression system enables cost-effective preparation of affinity matrices.
- A dissociation constant (KD) of 1.7×10^{-7} means that the recovery of biotinylated molecules can be accomplished under mild conditions with a high degree of purity.

» Intellectual Property Status

A US provisional patent application has been prepared and filed. Worldwide rights are available

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