Novel Multivalent Bioassay Reagents

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BACKGROUND

The guiding principle for the creation of biomolecular recognition agents has been that affinity is essential for both strength and specificity. Monoclonal antibodies, the dominant workhorse of affinity reagents, have mono-valent affinities in the uM-nM range with apparent affinities that can be sub nM with the bi-valency intrinsic in intact immunoglobulin structure. The avidin-biotin interaction used ubiquitously for biomolecular assembly is femto-molar and both highly specific and essentially irreversible. High affinity has been proclaimed the essential goal for the selection of useful specific aptamers, though there has been disagreement about a tight coupling of affinity and specificity.

TECHNOLOGY DESCRIPTION

Scientists at the University of California, San Diego have discovered that, although, monoclonal antibodies bind to captured and free targets with huge affinity, DNA nanoparticles of the present invention only bind to the captured molecules through high avidity but low affinity interactions. Therefore, they have developed a reagent platform that binds to target molecules only when they are captured or arranged on a surface. This technology is a novel biomolecular affinity reagent that replaces single or bi-valent affinity with hyperavidity.

APPLICATIONS

The invention has potential applications to produce novel affinity reagent for immunoassays. It also has the potential for *in vivo* imaging or therapeutic applications if the DNA particles can be made biocompitable with sufficient half-life.

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OTHER INFORMATION

KEYWORDS

bioassay, reagents, DNA nanoparticle, antibody, platform

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  - Other
  - Proteomics
- **Nanotechnology**
  - Materials
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