3D structure-based bioassay using protein nanowire

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In order to construct highly efficient diagnostic system, we designed bifunctional protein nanowire. protein S nanowires were genetically engineered and used as diagnostic probes for the antibody detection. Biotin binding peptide (BBP) and antigenic epitope of autoimmune disease antigen(ADA) were fusion expressed with protein S, and were formed biofunctional protein nanowire through spontaneous co-assembly. Biotinylated protein nanowires were conjugated with streptavidin to detect anti-ADA antibodies. The immunoassay system showed high sensitivity up to picomolar antibody concentration, demonstrating high potential use in diagnosis.