A Three dimensional diagnosis system using 3D structure-based system

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Abnormal concentrations of certain marker proteins often indicate the presence of various diseases. However, current diagnosis methods only allow detection when protein levels become higher than critical threshold concentrations. Since at these concentrations the disease is often significantly advanced, more sensitive methods that allow for early detection of protein markers could potentially revolutionize physician treatment of various diseases and increase patient survival rates. Anti-AG1 antibody and anti-AG2 antibody are present many years before the diagnosis of AD and are well-known autoantibodies usually detected in the sera of the patients with AD . Here we report novel three dimensional nano-bio-diagnostic systems with significant advantages regarding sensitivity, and practicability, which are developed by combining chemeric protein nanoparticles with three dimensional nanostructures The chemeric protein nanoparticles helped orient the AG1 and AG2 in a specific way on the surface at high densities, thereby enhancing sensitivity for the protein marker of interest. With this three dimensional nano-bio-diagnostic systems, the detection limit was significantly enhanced as compared to the conventional ELISA assays.