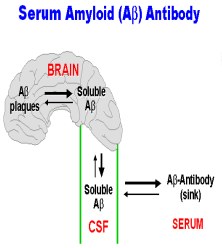
Prionsensor

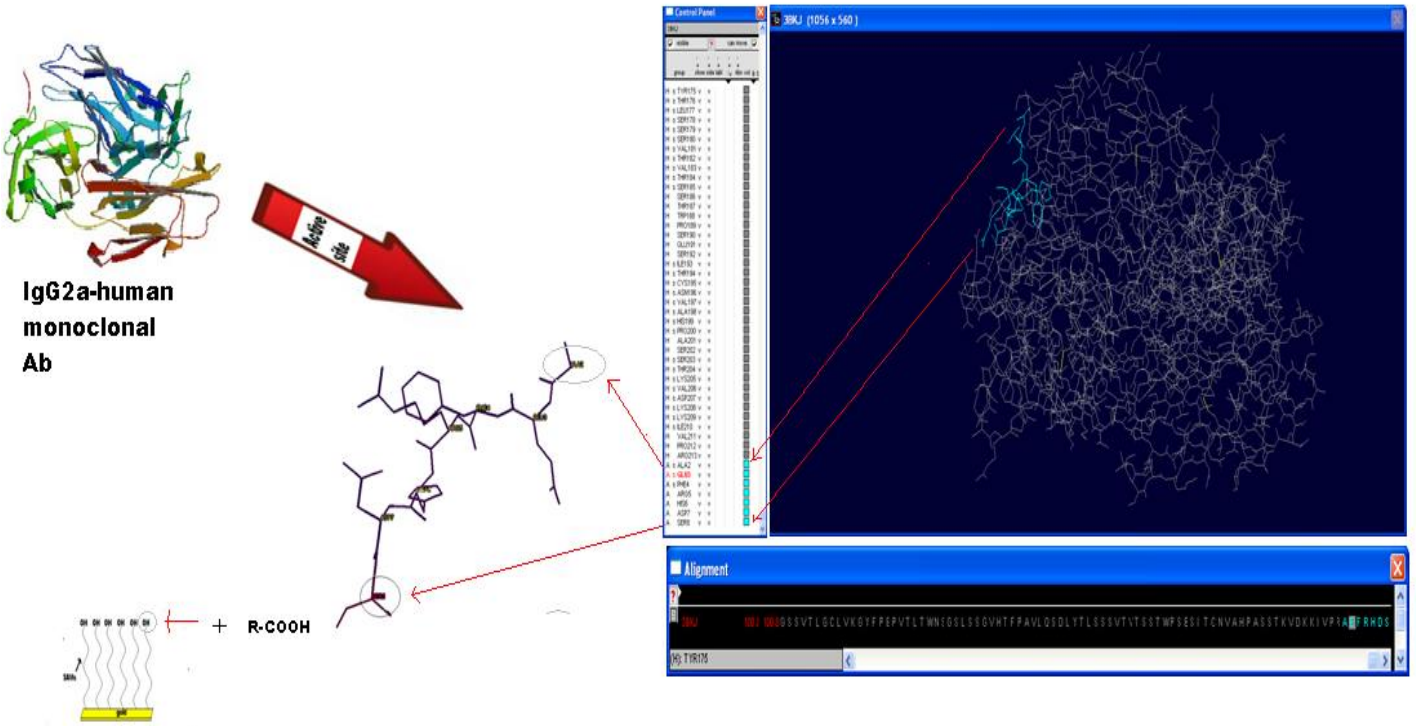
General: Creutzfeldt-Jakob disease (CJD) is a rare, degenerative, invariably fatal brain disorder with symptoms of dementia, hallucinations, speech impairments, ataxia, rigid postures etc... It is generally occurred due to presence of prions. When any infectious agent transmitted via transfer human Growth Hormone products, Immunoglobulins, Corneal graft products, electrode implants or may be through blood transfusion, prions become activated which leads to conversion of the normal protein to abnormal form which accumulates in the amyloid fold through polymerization into tightly packed beta sheets. This altered structure is stable and causes cell and tissue damage in brain. Generally amyloid fold presence can be sensed through cerebral spinal fluid (CSF) clinical analysis but we can also confirm the presence of amyloid fold in serum through a specific Biosensor- Prionsensor.



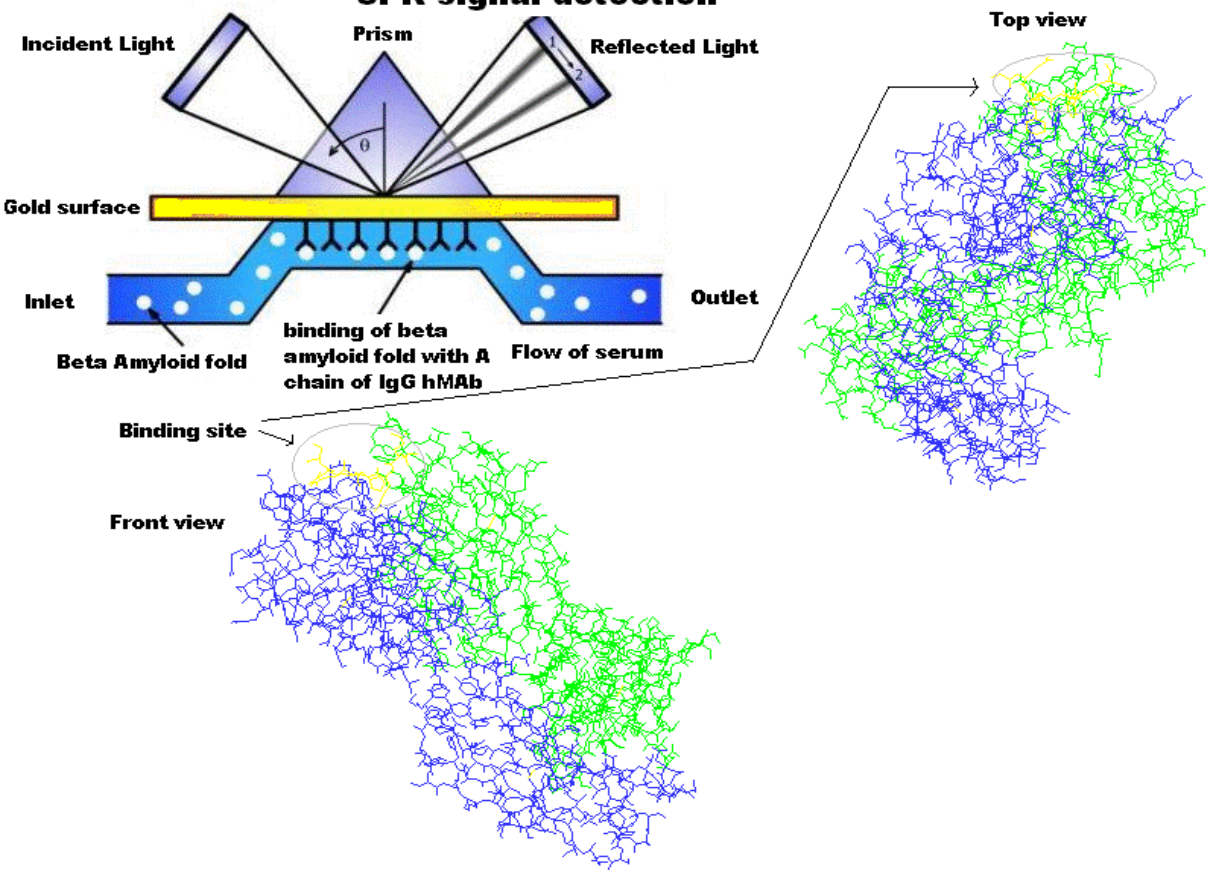
Bioreceptor: Beta amyloid fold makes complex with purified human monoclonal antibody IgG2a. Here from three chains A, H and L, A chain is responsible for making complex with beta amyloid fold. A chain contains active site consisting seven amino acids. We can immobilize alanine amino acid of A chain on SPR and Serine amino acid will bind with N terminal of the beta amyloid fold and the complex can be detected by using SPR technique

Transducer: Here, I have chosen SPR to detect the complex formation between IgG2a and beta amyloid complex. Here no labeling is required and gold provides excellent immobilization attachment via thiol groups.

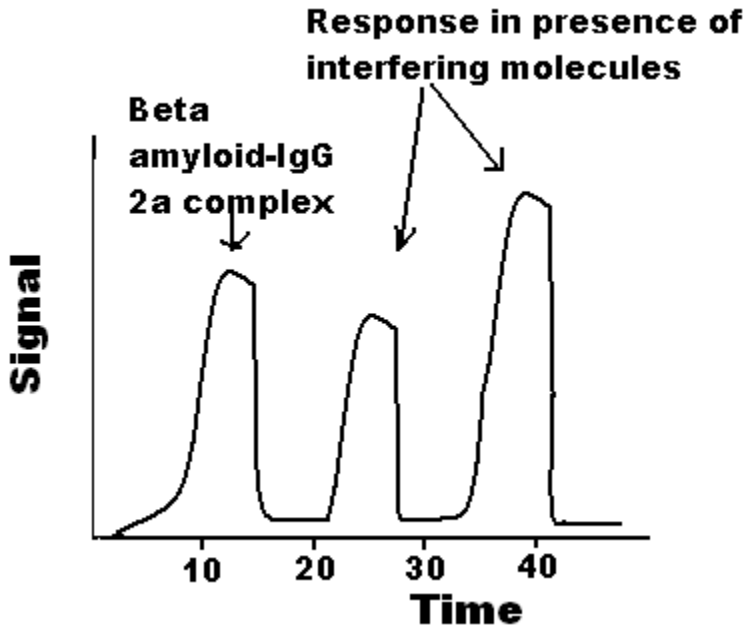
Immobilization:



SPR signal detection



Signal:



Interfering molecules: Many molecules present in the serum having binding affinity with IgG2a, soluble beta amyloid fold, some structural analogue of beta amyloid fold.