

Project #1

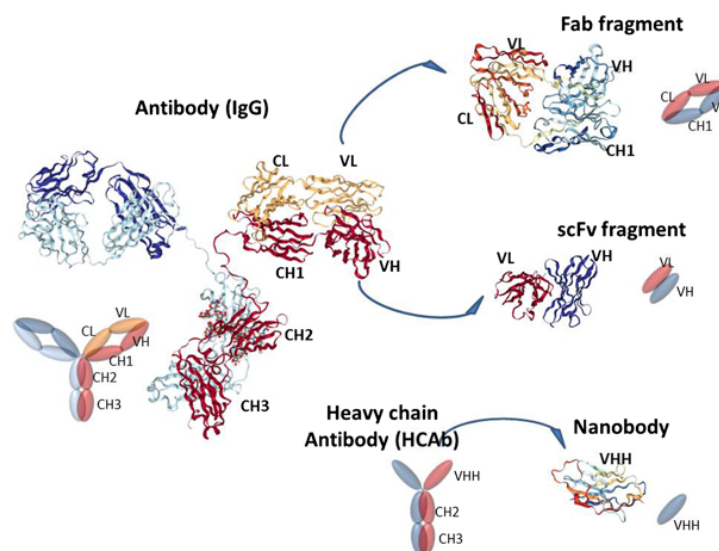
Characterization of nanobodies against various proteins implicated in neurodegenerative diseases

Description

Nanobodies are recombinant antibodies generated from the variable domains of heavy chain-only antibodies (HcAbs) found in camels. Compared to conventional antibodies, nanobodies possess excellent properties including small size, robust structure, stable and soluble nature in aqueous solution, high affinity, and specificity, superior cryptic cleft accessibility, and deep tissue penetration making them as exceptional tools for various biomedical applications including therapy for various diseases, targeting delivery to a specific region, as immunosensors and finally in in-vivo imaging. We have injected camels with different proteins involved in neurodegenerative diseases including Parkinson's disease and Alzheimer's disease. PBMCs were extracted from immunized camels and taken for RNA isolation and cDNA synthesis for phage display library construction. The current project aim would be to express nanobodies in bacteria followed by purification using affinity chromatography. The purified nanobodies will then be extensively characterized by a variety of biochemical techniques involving SDS-PAGE, Western blotting, Slot blot, and ELISA.

Mentors

Dr. Omar M. El-Agnaf, Principal Investigator. Email: uelagnaf@hbku.edu.qa, Dr. Nishant N Vaikath, Research Associate. Email: nvaikath@hbku.edu.qa



Source. Salvador J.-P. et al 2019