Characterization of macromolecular self-assembly structure in the bioprocess route

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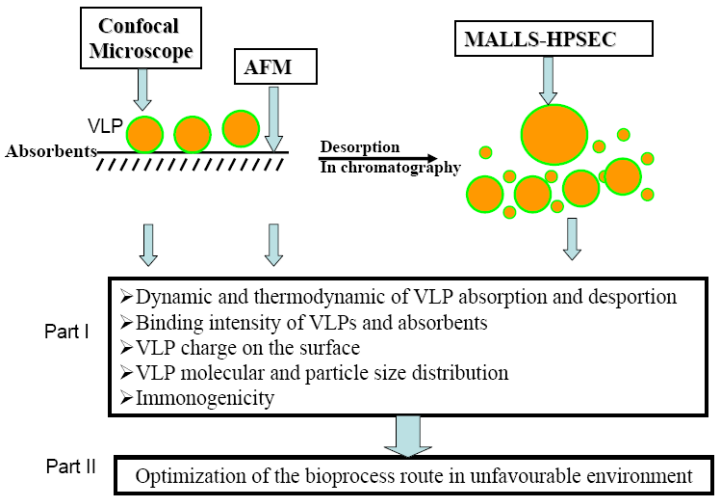
Nature of work: Molecular characterization of virus like particle proteins
Area: Leading edge of biopharmaceuticals
Funding: *Via* the various University scholarship schemes (see separate information for these).

Brief description: The immunogenicity of the virus-like particles (VLPs) are related to their more favourable macromolecular assembly structure which plays an important role to the clinical application of VLPs as one of the potential vaccines. The accepted route for VLPs bioprocess relies on *in vivo* assembly and then subsequently separating process in vitro under the favourable or unfavourable environment, which is so called as the process of chemical self-assembly or disassembly. Research into VLP assembly change in the unfavourable environment for VLPs manufacture is at the early stage. The difficulties of recognizing and addressing the consistent architecture and composition of VLPs during the bioprocess route, make the currently poor understanding of the kinetics, thermodynamics and mechanisms of supermolecular assembly, therefore, a drawback to the new bioprocess development. This investigation focus on recognizing and addressing the main driving force for the assembly changes of VLPs in the bioprocess route, especially in the unfavourable environment, eg., strong electrostatic interaction or hydrophobicity interaction between VLPs and absorbents caused by the high ligand density of absorbents.



There are many more in the areas of recombinant protein expression by animal cell cutrue, tissue engineering and bioprocess optimization. Feel free to contact me (jingxiu.bi@adelaide.edu.au; +61-8-8303-4118) or drop in to my office (N212) if you want to have further discussion or other possible PhD projects.