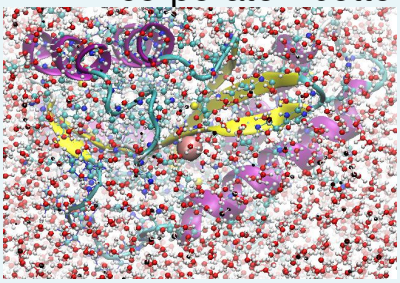
PhD Position in Computational Protein-Excipient Interactions

Manchester Institute of Biotechnology at the University of Manchester

Supervisor: Dr Richard Henchman
Co-supervisors: Dr Jim Warwicker
Prof. Paul Dalby

Apply here: http://www.chemistry.manchester.ac.uk/study/postgraduate/howtoapply
Funding: EPSRC Centre for Doctoral Training in Emergent Macromolecular Therapy
Application Deadline: 4 April, 2016

Research Project:
Given the rapid increase in protein therapeutics in the biotechnology sector, understanding the effects of commonly used salts, buffers and excipients on protein stability and self-assembly is critical to controlling problematic irreversible aggregation. This is especially significant for the next generation of therapeutics, which have been engineered for activity and efficacy, often at the expense of manufacturability. Current approaches to choose solution additives such as salts, buffers, and excipients use a trial-and-error process. New computational methods for predicting excipient effects on aggregation will incorporate bottom-up and top-down approaches. Methods that



the thermodynamic contribution of every molecule in the system will be combined with informatics approaches that derive protein-excipient interactions from protein-structure databases. These approaches will be combined with experimental data from dynamic and static light scattering that are being generated in several projects in the groups of Dr Robin Curtis (Manchester) and Prof. Paul Dalby (UCL). The project will deliver benchmarked predictive models for excipient effects on biologic aggregation, and more generally for the behavior of proteins engineered for synthetic biology. The research will be supported by training courses in UCL which are provided exclusively by the CDT in Emergent Macromolecular Biotherapy.