***Dept. Chemistry - Teaching Fellowship PhD project: Chemical Biology area***

**Design and characterisation of next-generation monoclonal antibodies using chemoenzymatic glycoengineering approaches.**

*UNLOCKING OPPORTUNITIES IN GLYCOSCIENCE TO EVOLVE IRELAND’S BIOPHARMACEUTICAL SECTOR*

Background: A funded teaching PhD opportunity is available in the Glycoscience lab. This ambitious project seeks to design next-generation monoclonal antibodies (mAbs) for enhanced drug safety, efficacy and half-life. Chemoenzymatic approaches as in Figure 1 and subsequent glycomics analysis will be performed. Functional studies such as binding assays (surface plasmon resonance (SPR)) and antigen assays (enzyme-linked immunosorbent assay (ELISA)) will be undertaken for structure function studies.

The successful applicant will be involved in the entire workflow, including the design, characterisation and functional studies of the generated next-generation mAbs. They will construct a suitable glycomics characterisation technology using an automated liquid handling station (Hamilton Starlet), high performance liquid chromatography (HPLC), mass spectrometry (LC-MS) and enzyme digestion panels. Characterising mAb glycosylation is essential for both the parent and next-generation products. They will also optimise the chemoenzymatic *in vitro* glycoengineering approaches. Function structure studies will be afforded such as SPR and ELISA.

Diagram

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