



Ph.D. opportunity in *Carbohydrate Chemistry* at University College Dublin

Institution: University College Dublin (UCD)

Supervisor: Asst. Prof. Xiangming Zhu (UCD)

Project Title: Synthesis and biological evaluation of thiosugar complexes

Stipend: €25,000 per year with EU fee covered

Start Date: 01/09/2025

The Zhu Group in the School of Chemistry at University College Dublin is seeking a Ph.D. student for a project on synthesis and biological evaluation of thiosugar complexes. The position is for four years and will be financially supported by UCD School of Chemistry.

The project is aimed to make thiosugar complexes with focus on synthesis and modification of thiosugars. Thiosugars are becoming the key building blocks for the construction of various S-linked glycosides, which often exhibit improved biological profiles. We have a long-standing interest in thiosugar chemistry and have developed a highly stereoselective procedure for the synthesis of α -glycosyl thiols (see representative publications below). A range of S-linked glycolipids and NHC-Au(I)-thiosugar complexes were also synthesised in our laboratory and found to have interesting bioactivities. In this project, we like to first carry out methodological study on synthesis of acylated α -thiosugars as an extension of our previous work and then couple them with aglycone structures to construct glycoconjugates of biological interest.

The research will involve:

- Development of a new approach to acylated α -glycosyl thiols.
 - Synthesis of a range of thiosugars with different protecting group patterns and anomeric configurations.
 - Synthesis and investigation of bio-relevant S-linked glycoconjugates.
- i. Mild and effective method for the nickel-catalysed arylation of glycosyl thiols in aqueous surfactant solution, *J. Org. Chem.*, **2024**, *89*, 17502-17517.
 - ii. Synthesis of α -glycosyl thiols by stereospecific ring-opening of 1,6-anhydrosugars, *J. Org. Chem.*, **2011**, *76*, 10187-10197.
 - iii. Investigation of α -thioglycoside donors: Reactivity studies toward configuration-controlled orthogonal activation in one-pot systems, *Org. Lett.*, **2016**, *18*, 3578-3581.

Applications are invited for this funded PhD vacancy in UCD School of Chemistry.

Applications are welcome from students with, or expecting to gain, a first or upper second class Honours degree (or equivalent) in Chemistry or a related subject. The successful candidate will start in September 2025. The position will be filled once a suitable candidate has been identified so early application is advised. Interviews will be held by zoom or in person as appropriate.

A Scholarship for up to 4 years of stipend and fees is available for the successful applicant thanks to generous funding from UCD School of Chemistry.

CANDIDATES should apply directly to Dr Xiangming Zhu (xiangming.zhu@ucd.ie)

Applicants should send a cover letter and a CV including the names of at least two people willing to provide a reference. UCD supports equal opportunities and does not discriminate against individuals on the basis of gender, age, race, colour, nationality, ethnic or national origin, religion, marital status, family status, sexual orientation, disability or membership of the traveller community.

Supplementary Information:

The University: <https://www.ucd.ie/>

UCD College of Science: <https://www.ucd.ie/science/>

UCD School of Chemistry: <https://www.ucd.ie/chem/>

Equality Diversity and Inclusion at UCD: <https://www.ucd.ie/workatucd/diversity/>