



PhD in Supramolecular Metallodrug Platform Synthesis

UCD (Dublin, Ireland)

Applications are invited from suitably qualified candidates for a PhD position in synthetic chemistry under supervision of Dr Joseph Byrne, School of Chemistry, University College Dublin. This position, funded by the Irish Research Council, is available to start immediately, September 2023 at the latest.

Project Description:

The LINK4LECTIN project will develop a modular strategy for discovery of new antimicrobial agents. New diagnostic and therapeutic tools against bacteria are urgently needed to face the growing global challenge of antimicrobial resistance. This project will establish a strategy for modular tuning and optimisation of hybrid metallodrug candidates for this purpose. The PhD student will synthesise families of compound, which pair the bacterial protein-targeting ability of glycoconjugates with bioactive metal complexes. If successful, you will focus on design and synthesis of new families of catenanes/rotaxanes, metal complexes and/or carbohydrate-derivatives for antimicrobial medicinal chemistry applications in this interdisciplinary project.

Information on the research team:

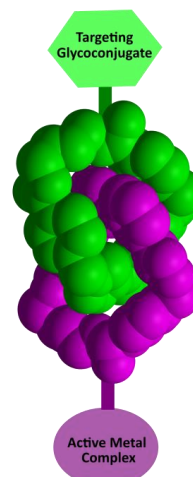
The Byrne Group is a growing bioinorganic chemistry research group that targets carbohydrate-protein interactions to build new diagnostic and therapeutic tools for pathogens. Our work is at the interface of carbohydrate and inorganic chemistry. You will join another PhD student already working on this project. More information is available at www.byrneresearch.com and www.ucd.ie/chem

Description of Your Role:

We are looking for an enthusiastic researchers who can take initiative and lead work on a new project. As a PhD student, you will join a growing research group, and you will contribute to the LINK4LECTIN project under the supervision of the Principal Investigator, Dr Byrne. This exciting research will focus on design, organic synthesis and characterisation of supramolecular mechanically-interlocked systems, and metal coordination complexes (as well as some carbohydrate chemistry). Your role will require analysis of data from NMR, Mass Spectroscopy, UV/Vis absorption and emission spectroscopy, antimicrobial and biofilm inhibition assays, and confocal/fluorescent microscopy. As part of a structured PhD programme, you will enhance your research portfolio through subject-specific training and gaining transferrable skills. There may be opportunities to travel to collaborators' labs for training, as well as to international conferences. You will carry out research in the lab with curiosity and enthusiasm. You will actively engage with colleagues in the School Chemistry, the wider UCD community, and collaborators to maximise the impact of your research.

Duties:

- Undertake research as directed by the PI, designing and synthesising mechanically-interlocked molecules, carbohydrate derivatives and/or metal complexes, and establishing their antimicrobial or bio-imaging behaviour
- Perform fundamental research towards the completion of your doctoral thesis: including preparing, conducting and recording the outcome of experiments; developing appropriate research methods; writing up results in the form of reports, manuscripts and thesis chapters
- Enrol in [Structured PhD programme \(Dublin Chemistry\)](#), and complete all necessary credits for your progression (including requirement to contribute to teaching undergraduates)
- Read academic papers, journals and textbooks to keep abreast of developments in your own specialism and related fields



- Responsibly use material resources within the project budget
- Contribute to the broader activities of the research team (group meetings, health and safety, student supervision, maintenance of equipment, etc.), the School and the University
- Deliver presentations at national and international conferences and meetings, and undertake outreach activities relevant to LINK4LECTIN
- Contribute to publishing data in leading journals and/or protect new intellectual property
- Perform research in accordance with the university's research integrity policy, the project data management policy and other relevant policies
- Carry out any other duties required by PI for the successful implementation of the project

Essential Requirements:

- A primary degree in chemistry (BSc or equivalent), demonstrating outstanding performance
- Motivation and willingness to take initiative in developing research projects
- Experience in multi-step chemical synthesis, purification and characterisation (particularly use of NMR spectroscopy and column chromatography)
- A demonstrated interest in one or more of (i) supramolecular chemistry; (ii) carbohydrate chemistry; (iii) metal coordination chemistry
- Strong interpersonal skills and ability to work well within a collaborative team
- Excellent verbal and written English language communication skills ([minimum requirements](#))
- Demonstrated strong organisational skills

Desirable Requirements:

- MSc in synthetic chemistry, or significant research experience will be an advantage
- Additional training in medicinal chemistry and/or cell-culture techniques
- Relevant university or industry research lab experience will be an advantage
- Familiarity with equality, diversity and inclusion activities, outreach or media engagement

Scholarship: €18,500 per annum (tax-free stipend) with an additional contribution of €5,750 towards fees/levies as per IRC awards regulations. All nationalities may apply. Travel to appropriate conferences, research trips and/or training secondments may also be funded.

Start date: As soon as possible before September 2023

To Apply: Applications may be submitted at the following link: <https://forms.gle/npNL2rtDLfAZ5RwL8>. All of the following are required, or applications will not be considered:

1. **Cover letter:** A detailed personal statement including your motivation for applying for this particular studentship (please indicate experience which matches the project)
2. **Sample of own independent written work:** A PDF copy of independent writing in the area of chemistry (e.g. BSc research report, MSc thesis chapter)
3. **CV (including contact details of two referees):** Include a list of experience, any awards or publications and evidence of excellent academic performance to date. Include all grades in CV. Please specifically detail any experience and skills in the area of synthetic chemistry.

Closing date for receipt of applications is 5.00 pm, 28 May 2023

Suitable candidates will be invited to interview for the position and arrangements for a start date made with the successful candidate. **Interviews will take place virtually.**

We reserve the right to re-advertise or extend the closing date for this post. Due to the high volume of interest, we cannot guarantee feedback to all applications. UCD is an equal opportunities employer, and candidates of all backgrounds and genders are encouraged to apply.