UCD School Of Chemistry
Scoil na Ceimice UCD

PhD in Targeted Antimicrobial Antimicrobial Metallodrugs and Coatings (2 positions)

UCD (Dublin, Ireland) Supervisor: Dr Joseph Byrne

Applications are invited from suitably qualified candidates for two PhD positions in chemistry under the supervision of Dr Joseph Byrne, School of Chemistry, University College Dublin. These positions, funded by Taighde Éireann Research Ireland, are available to start in September 2026 (or sooner).

Description of the Project and the Research Team:

The GlycoMetalGuard project will develop antimicrobial metallodrug candidates, with the aim of making functional polymeric coatings with the ability to control bacterial infections and address the challenge of antimicrobial resistance. This new project complements other research in our lab. The Byrne Group is a growing bioinorganic chemistry research group that targets carbohydrate-protein interactions to build new diagnostic and therapeutic tools for bacterial infections. Our work is at the interface of carbohydrate chemistry and inorganic chemistry. The group currently has 5 PhD students and a postdoc. More information available at www.byrneresearch.com or www.ucd.ie/chem

Description of Your Role:

We seek two 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 GlycoMetalGuard project under supervision of Principal Investigator, Dr Byrne. This exciting research will focus on design, multi-step synthesis, metal complexation, purification and characterisation of glycoconjugate-based metal complexes, and materials based on these compounds. Your role will require measuring and analysing data from techniques including NMR, Mass Spectroscopy, UV/Vis absorption and emission spectroscopy, materials characterisation, ITC/SPR, etc. One student will be co-supervised by biochemist Prof Siobhán McClean (Conway Institute), and will study how these agents disrupt bacterial growth and/or biofilm formation, as well as expressing carbohydrate-binding proteins.

As part of UCD's structured chemistry PhD programme, you will enhance your research portfolio through subject-specific training and gaining transferrable skills. There will be opportunities to travel internationally to collaborators' labs for training, as well as to conferences. You will carry out lab-based research with curiosity and enthusiasm. You will engage respectfully and collegially with researchers in School Chemistry, Conway Institute, the wider UCD community, and collaborators, to maximise the impact of your research.

Duties:

- Undertake research as directed by the PI, designing and sythesising carbohydrate derivatives, metal complexes, and soft materials, and profile their biological 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, and complete all necessary credits for your progression (including requirement to contribute to teaching and mentoring undergraduates)
- Read academic literature to keep abreast of developments in your field and related areas
- Responsibly and sustainably use material resources within the project budget
- Contribute to the broader activities of research team (group meetings, health & safety, student supervision, equipment maintenance, etc.), the School, Conway Institute and UCD
- Deliver presentations at national and international conferences and meetings, and undertake outreach activities relevant to GlycoMetalGuard
- 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:

- **MSc** in synthetic **chemistry**, or related area (complete or submitted). **An experienced BSc graduate, or final-year student**, demonstrating outstanding performance will be considered
- 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 of organic molecules)
- A demonstrated interest in one or more of (i) carbohydrate chemistry; (ii) metal coordination chemistry; (iii) polymer or materials 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:

- Experience characterising soft materials or polymers (in addition to synthetic skills) will be an advantage
- Experience in microbiology, particularly with bacteria, will be a strong 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 or media engagement

Scholarship: €25,000 per annum (tax-free stipend) with an additional contribution of €5,750 towards fees/levies as per Research Ireland awards regulations. The project has budget earmarked for travel to appropriate conferences, research trips and/or training secondments.

Start date: At latest September 2026. (Interviews expected to be held in April-May 2026)

To Apply: Applications must be made using the following application form, and providing all requested details: https://forms.gle/kJYuEnK1vmQzUZHf9 Applications submitted any other way will not be considered. Only candidates with qualifications in chemistry need apply. The application will include the following:

1. **Motivation statement:** A detailed personal statement including your motivation for applying for this particular studentship
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, sample of lab book). Please do not include published articles with many authors without clarifying your exact contribution.
3. **CV:** 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, 30 March 2026

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, nationalities, and genders are encouraged to apply.